

4. Douglas-Fir Ecological Series

Table 04-1. Full and short names for the ecological types in the Douglas-Fir Ecological Series.

Ecological Type Code	Name	Plant Association Code	Short Name
FD06	Douglas-fir/wax currant-Arizona fescue–Gravelly or cobbly barely-Mollic Eutroboralfs or Argiborolls–Steep slopes, 7,600-10,000 ft	PSME/RICE- FEAR2	Douglas-fir/wax currant-Arizona fescue–Coarse thin-dark soils–Steep
FD08	Douglas-fir/serviceberry–Thin-dark Frigid soils–Steep northerly backslopes or shoulders, 7,900-10,000 ft	PSME/AMAL2	Douglas-fir/serviceberry–Steep northerly
FD09	Douglas-fir/pachistima–Dark Frigid soils–Northerly backslopes, 7,900-10,000 ft	PSME/PAMY	Douglas-fir/pachistima–Dark soils–Northerly
FD10	Douglas-fir/bitterbrush–Thin-dark Frigid soils–Gentle slopes, 7,900-10,300 ft	PSME/PUTR2	Douglas-fir/bitterbrush–Gentle slopes
FD11	Douglas-fir/elk sedge–Dark Frigid or Cryic soils–Gentle to steep slopes, 8,700-10,200 ft	PSME/CAGE2	Douglas-fir/elk sedge–Cold to moderately cold-Gentle to steep
FD12	Douglas-fir/Thurber fescue–Dark Cryic soils–Gentle slopes, 8,700-10,400 ft	PSME/FETH	Douglas-fir/Thurber fescue–Cold dark soils–Gentle
FD13	Douglas-fir/kinnikinnick–Thin-dark Frigid or Cryic soils–Gentle slopes, 8,800-10,000 ft	PSME/ARUV	Douglas-fir/kinnikinnick–Cold to moderately cold
FD14	Douglas-fir/lodgepole pine/buffaloberry–Sandy Cryochrepts–Gentle to steep northerly slopes, 9,000-10,600 ft	PSME/SHCA	Douglas-fir/buffaloberry–Light-colored sandy cold soils–Northerly

This Southwestern *Pseudotsuga menziesii* (Douglas-fir) Series is a new name for the *Pseudotsuga menziesii* (Douglas-fir) Series of Donart and others (1978), Layser and Schubert (1979), Hoffman and Alexander (1980), Hess (1981-1986), Hess and Wasser (1982), Hoffman and Alexander (1983), Mauk and Henderson (1984, in part), Youngblood and Mauk (1985), Alexander (1985-1986-1988, in part), Fechner (1985), Komárková (1986-1988), DeVelice and others (1986), Larson and Moir (1989), Muldavin and others (1990), and Kittel and others (1994). Moir (1983) considers it a climatic series. It is the part of the *Pinus contorta* Series of Alexander and others (1986b), Komárková (1986), and Komárková and others (1988), which is actually seral to Douglas-fir; for example, their *Pinus contorta/Juniperus communis*.

This series is very different from the Northwestern *Pseudotsuga menziesii* (Douglas-fir) Series of Hoffman and Alexander (1976), Pfister and others (1977), Steele and others (1981-1983), and Cooper and others (1987). Part of the *Pseudotsuga menziesii* Series of Mauk and Henderson (1984) is in the Northwestern Series as well.

Stands are often large to very large and isodiametric to elliptic in shape.

Vegetation, Climate, Soils

In good condition, most of the lower elevation Douglas-fir types should have dense shrub cover in several layers ranging from tall to medium (Baker 1983). In many stands in the UGB, these shrubs have been severely browsed, since they often occur near the heavily used elk and deer winter ranges, and have been grazed by livestock for 120 years or more. At lower elevations, these stands may now be dominated by aspen in a permanent disclimax.

Table 04-2. Climate		
Characteristic	Value	Reference
Precipitation zone	300-610 mm/yr 12-24 in/yr	Local data

At higher elevations, lodgepole pine may dominate the disclimax, sometimes with aspen seral as well. The light-colored soils and the presence of plants usually associated with Douglas-fir, such as kinnikinnick, pachistima, Oregon-grape, or common juniper, indicate stand history. Hess and Alexander's (1986) *Pinus contorta/Juniperus communis* habitat type is a good example of a disclimax that occurs in the UGB. Such disclimax stands can be found upwind (usually to the west) of Douglas-fir seed sources. Lodgepole pine reaches the southernmost extension of its range at about the middle of the UGB, so lodgepole pine is uncommon in the south half of the UGB, and is absent from the native flora of New Mexico (Moir 1993).

Insect outbreaks have devastated whole watersheds of Douglas-fir in the UGB, especially in rainshadow climates like middle Cochetopa Creek and upper Cebolla Creek. An epidemic of spruce budworm in Douglas-fir usually starts the process, weakening most trees. Spruce beetles often follow, which kill the trees (Mask, personal communication).

Timber Management

Many of these stands are unsuitable for timber production, especially at lower elevations. DeVelle and others (1986) state that this Series does not include productive timberlands, though lodgepole pine-dominated stands are an exception. Tree productivity is low to moderate (Hoffman and Alexander 1983, Hess and Alexander 1986, Fitzhugh and others 1987). Regeneration of Douglas-fir in the UGB is often difficult to obtain following almost any silvicultural practice, especially where the soil has been disturbed (Hoffman and Alexander 1980-1983, Hess and Alexander 1986).

In the UGB, Douglas-fir with diameters of 8-10 in and heights of 60 ft, where precipitation < 20 in/yr, bears little resemblance to the same species on the west slope of the Cascades in the Pacific Northwest, where tree diameters range from 30 to 40 in and heights exceed 250 ft, with precipitation > 100 in/yr. These two locations are extreme opposites for a species with a wide range of tolerances.

At lower elevations. Douglas-fir or aspen could be managed for timber, but these sites are usually too rocky, steep, unproductive, and inaccessible for practical management (see Komárková and others 1988). At lower elevations, Douglas-fir trees are short, slow-growing and sometimes of poor form; aspen are usually short and have inherently poor form, often made poorer by big game and livestock browsing. Tree production is low. Shrubs can be increased by maintaining low overstory basal areas (Hoffman and Alexander 1980). Logging for firewood, mine timbers, and railroad ties has occurred in some of the more accessible stands.

Silvicultural techniques should be considered to improve wildlife habitat, or mitigate the effects of insect outbreaks, but management is limited by steep slopes and likelihood of soil erosion or mass movement (Komárková and others 1988). Group selection and shelterwood cuttings approximate the regeneration patterns observed in natural forests (Hoffman and Alexander 1983). Regeneration may be difficult because of the dryness of openings (Komárková and others 1988).

At higher elevations. Where slope angles are shallow enough for access, Douglas-fir management is usually limited by the dryness of sites. Most stands are in rainshadow climates, where precipitation is often < 20 in/yr, and tree growth is slow. Older trees are typically sparse and small, interspersed with patches of aspen, limber pine, or bristlecone pine. The patches of pine occur on drier, rockier, shallower-soil sites, where tree growth is even slower than in the Douglas-fir patches. Mixed pine and Douglas-fir patches have little potential for successful management and should be left alone. Where aspen occurs, soils are deeper and have better nutrient content. Mixed aspen and Douglas-fir patches have greater potential for successful management if a combination of techniques that regenerates aspen are used, such as patch clearcutting with prescribed burning. The regenerating aspen protects the site and conifer seedlings, and provides the seedlings with better moisture and nutrients.

At higher elevations, lodgepole pine may be managed for timber. Aspen is also managed where it shares dominance or where habitat diversity is important. When lodgepole pine stands are to be managed, clearcutting or shelterwood cutting can be done in sawlog-sized stands with either serotinous or nonserotinous cones, though scarification may be needed for successful natural regeneration. Regeneration is slow on south slopes because of limited soil moisture; a shelterwood system is more likely to be successful. On other aspects, regeneration success depends on the cone habit, amount of seed available, and slash-disposal treatment.

In clearcut stands with non-serotinous cones, openings should be small, 3-5 acre patches or narrow, 400-ft wide strips to encourage natural regeneration. Larger openings require fill-in planting. In stands with serotinous cones, clearcut openings may be up to 40 acres where heavy insect or disease infestations justify it. Slash must be managed so that the seed source is not destroyed. Group-selection cutting is possible where stand structure is irregular, but individual-tree selection cutting is generally appropriate only in recreation areas (Hess and Alexander 1986, Alexander and others 1986, and Komárková and others 1988; as *Pinus contorta*/*Juniperus communis*).

Silviculturists recommend that lodgepole pine stands be thinned at about 30 years old to achieve merchantable sawtimber at a rotation age of about 80 years (Cole and Koch 1995). Growing-stock levels (GSL) of 80 to 120 are most appropriate for timber production (Hess and Alexander 1986, Alexander and others 1986).

Fire

Before settlement, fires were extensive and frequent in most of these stands (Fitzhugh and others 1987), with a natural stand-replacing fire interval of 150 to 200 years. Following a stand-replacing fire, aspen usually regenerates quickly and is gradually replaced by lodgepole pine, which gives way more slowly to Douglas-fir (or more rarely in the UGB, ponderosa pine).

Most stands dominated by Douglas-fir are very flammable now because of their high density, a product of protection from fire and insect epidemics. Fuel loadings are typically high to very high, and this situation is compounded by the occurrence of stands in watersheds with a rainshadow climate, which increases the possibility of long periods of hot, dry weather.

Prescribed fire can open these stands up and lessen the effects of insects, but young Douglas-fir are not fire-resistant, so are easily killed by fire. Older, larger Douglas-fir trees can survive a light or moderate fire. A scorched Douglas-fir tree attracts Douglas-fir beetles, so a tree that survives a fire may later be killed by insects (Mask, personal communication).

Prescribed hot-crown fire in Douglas-fir stands may eliminate much of the Douglas-fir seed source and encourage dominance by seral species such as lodgepole pine or aspen, where they are present. If neither of these seral species is present, hot prescribed fire may require planting of tree seedlings to regenerate a forest (Lyon 1971). Seven growing seasons after such a hot fire, the herbaceous community cover was higher and more diverse than before the fire (Lyon 1971).

Range and Wildlife Management

Forage production is low, and most stands are too rocky and steep to be grazed by livestock. In aspen stands on shallower slopes, forage production may be moderate, and the stands provide cover and shade for livestock in the late season.

Wildlife values for these stands are potentially high to very high (Komárková and others 1988). At lower elevations, the islands of Douglas-fir and aspen in a sea of sagebrush have the highest values for elk and deer browse and cover, a wide variety of birds and small mammals, and raptors. Many lower-elevation stands occur within elk and deer winter range, therefore they have been heavily browsed. Their current wildlife values are significantly lower than their potential, with severely depleted populations of palatable shrubs such as serviceberry, bitterbrush, mountain-mahogany, or currants.

At higher elevations, stands are more continuous and wildlife values are moderate to high, especially where aspen shares dominance with Douglas-fir or lodgepole pine. These stands are more typically located in deer and elk transitional range. The suite of birds found in continuous forest is different from that in the Douglas-fir islands. Damage to Douglas-fir trees from porcupines can be a problem in some stands (Tiedeman 1978).

Sites of a type similar to the open-canopy Douglas-fir/Arizona fescue type in the UGB are a medium-sized component of a low-elevation bighorn sheep winter range and intermediate range (but not the lambing or summer ranges) west of Saguache near the UGB. Within the winter range, Arizona fescue (*Festuca arizonica*) and mountain muhly (*Muhlenbergia montana*) are major components of the bighorn diets that occur in Douglas-fir/Arizona fescue stands (Shepherd 1975).

Recreation, Roads & Trails, Scenery

The Douglas-fir "islands" at lower elevations are unsuitable for roads or trails. Lower-elevation stands often occur on steep, north-facing slopes, the worst place to put a road or trail. The more continuous stands of Douglas-fir at higher elevations and on gentler slopes are more suitable for roads and trails. Such sites are more stable, but erosion potential is still a major limitation. Proposed road or trail routes should be very carefully planned to lessen impacts, especially erosion. Sites are generally unsuitable for construction.

The sites are also generally unsuitable for developed recreation because they are often too steep, rocky, and erodible for dispersed camping or other recreational activity. Sites where aspen is a conspicuous component of the overstory are not suitable for campgrounds because consequent damage to the aspen trees often leads to increased disease and death of the aspen component.

Revegetation and Rehabilitation

Revegetation is difficult, due to steep slopes, potential for erosion, shallow soils, shallow rooting depths, and droughty soils (Tiedeman 1978). Any physical soil disturbance accelerates erosion, making the use of equipment of any kind unwise. If sites are disturbed, slopes must be stabilized with mulch or net, and diversion banks must be established to divert water away from the area.

Planting should be on the contour. Erosion and deposition from upper slopes, drought, and disturbances from wildlife are common causes of revegetation failure (Tiedeman 1978). Planted areas must be fenced from livestock, deer, and elk (Tiedeman 1978).

Key to Ecological Types in the Douglas-fir Series

1. "Tall palatable shrubs" include serviceberry (AMAL2 or AMUT), maple (ACGL), and chokecherry (PAV11).
2. TLC = total live cover.

1. Total live cover (including trees) <80%(2)
 1. Total live cover (including trees) >80%(5)
 2. Tall palatable shrubs¹ >0.5% cover FDo8
 2. Tall palatable shrubs¹ absent or rarely <0.5% cover(3)
 3. Wax currant (RICE) or ocean-spray (HODI) >1%. Arizona fescue (FEAR2) >2%..... FDo6
 3. Wax currant and ocean-spray absent or <1%. Arizona fescue absent or <2%(4)
 4. Kinnikinnick (ARUV) >5% FD13
 4. Kinnikinnick absent or <5%. Elk sedge (CAGE2) prominent..... FD11
 5. Tall palatable shrubs¹ >1% cover. Steep northerly backslopes or shoulders, 7,900-10,000 ft..... FDo8
 5. Tall palatable shrubs¹ absent or <1% cover(6)
 6. Wax currant or ocean-spray >2% cover if TLC² <125%; >5% cover if TLC² >125%. Arizona fescue >2%.
Gravelly or cobbly soil surface. Steep slopes, 7,600-10,000 ft FDo6
 6. Wax currant and ocean-spray absent or <2% cover. Arizona fescue absent or rarely <1%(7)
 7. Bitterbrush (PUTR2) >2% cover. Big sagebrush (ARTR2) often prominent, >10% cover. Gentle slopes, 7,900-
10,300 ft FD10
 7. Bitterbrush absent or <2% cover..... (8)
 8. Buffaloberry (SHCA) >5% cover. Lodgepole pine often shares dominance with Douglas-fir. Sandy, cold, light-
colored soils (Cryochrepts). Northerly slopes, 9,000-10,600 ft FD14
 8. Buffaloberry absent or <5% cover. Soils rarely sandy, sometimes cold (Cryic), dark (Mollic) or light-colored(9)
 9. Thurber fescue (FETH) >5% cover. Dark (Mollic), cold (Cryic) soils. Gentle slopes, 8,700-10,200 ft
..... FD12
 9. Thurber fescue absent or <5% cover. Soils dark or light-colored, cold (Cryic) or moderately cold (Frigid)
.....(10)
 10. Twinflower (LIBO3) >2%. cover Subalpine fir or Engelmann spruce sometimes present. Cold (Cryic), light-
colored soils (Cryochrepts and Cryoboralfs). Steep northerly slopes, 9,100-10,100 ft
..... FLo2, in Subalpine fir-Douglas-fir Series
 10. Twinflower absent or <2% cover. Subalpine fir and Engelmann spruce absent or very minor, <0.1% (11)
 11. Pachistima (PAMY) >2% cover. Aspen (POTR5) often shares dominance(12)
 11. Pachistima absent or <2% cover(13)
 12. Subalpine fir sometimes shares dominance with Douglas-fir. Soils cold (Cryic), dark (Mollic) or light-
colored. Moderately steep slopes, 9,300-10300 ft FLo1, in Subalpine fir-Douglas-fir Series
 12. Subalpine fir absent or very minor, <0.1% cover. Soils moderately cold (Frigid), dark (Mollic). Northerly
slopes, 7,900-9,950 ft FDo9
 13. Kinnikinnick (ARUV) absent or <5%. cover. Elk sedge (CAGE2) prominent, usually >20% cover. Dark (Mollic),
moderately cold (Frigid) to cold (Cryic) soils. Gentle to steep slopes, 8,700-10,200 ft FD11
 13. Kinnikinnick >5% cover(14)
 14. Douglas-fir, lodgepole pine, or aspen the only trees dominant. Dark (Mollic) or light-colored soils. Gentle
slopes, 8,800-9,940 ft, usually in partial rainshadow but outside the deep rainshadows FD13
 14. Blue spruce or Engelmann spruce dominant instead of (or in addition to) Douglas-fir, lodgepole pine, or
aspen. Light-colored soils (Cryoboralfs or Eutroborealfs). Gentle northerly slopes, 9,400-10,200 ft, in deep
rainshadow climates FD16, in Blue-Engelmann Spruce Uplands Series
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Table 04-3. Characteristics of Ecological Types within Ecological Series 4 in the Upper Gunnison Basin.
Numbers are shown in form Average (Minimum-Maximum)

Code Short Name	No. Samples	Elevation, ft	Avg. Aspect, °M (r) Slope, %	Soil Coarse, %	Depth, cm Mollic, cm	Surface: Coarse, % Bare, %	Cover, % Trees Shrubs Graminoids Forbs	Total Live Cover, % No. Species TLC/NS, %
FD06 Douglas-fir/wax currant- Arizona fescue-Coarse thin-dark soils-Steep	31	8,729 (7,600-10,000)	301 (0.33) 39 (14-100)	64 (28-90)	49 (8-124) 13 (3-26)	27 (4-72) 9 (0-60)	48 (20-75) 19 (0-81) 22 (0-115) 7 (0-71)	96.0 (37.4-268.8) 25 (13-40) 4.3 (1.9-10.6)
FD08 Douglas-fir/serviceberry- Steep northerly	35	8,875 (7,960-9,920)	357 (0.64) 37 (8-66)	59 (22-85)	69 (33-180) 15 (0-48)	12 (0-80) 5 (0-15)	80 (14-211) 58 (3-165) 65 (0-166) 41 (0-185)	243.7 (68.2-491.5) 25 (12-51) 11.2 (2.8-26.1)
FD09 Douglas-fir/pachistima- Dark soils-Northerly	34	9,391 (7,960-9,920)	320 (0.70) 32 (13-52)	47 (13-75)	70 (46-104) 15 (5-33)	11 (0-80) 1 (0-15)	79 (37-120) 62 (10-135) 48 (1-111) 38 (0-125)	227.0 (107.0-412.5) 18 (8-29) 13.7 (4.7-24.3)
FD10 Douglas-fir/bitterbrush- Gentle slopes	41	9,097 (7,960-10,260)	220 (0.38) 27 (3-100)	58 (24-84)	65 (40-152) 10 (0-30)	19 (0-80) 5 (0-18)	48 (16-100) 39 (11-85) 44 (0-150) 14 (0-72)	145.0 (67.2-319.5) 22 (12-38) 7.3 (1.8-17.8)
FD11 Douglas-fir/elk sedge- Cold to moderately cold- Gentle to steep	50	9,337 (8,700-10,120)	325 (0.23) 30 (13-66)	42 (9-85)	62 (33-155) 17 (1-52)	6 (0-24) 3 (0-18)	68 (28-118) 30 (2-121) 58 (6-146) 40 (1-201)	196.3 (66.0-448.5) 18 (5-42) 12.5 (3.0-29.6)
FD12 Douglas-fir/Thurber fescue-Cold dark soils- Gentle	60	9,752 (8,700-10,400)	213 (0.59) 22 (10-40)	*	*	3 (0-24) 7 (0-18)	71 (23-131) 61 (10-140) 117 (50-200) 81 (17-240)	330.1 (170.0-592.5) 17 (11-44) 20.4 (4.6-33.6)
FD13 Douglas-fir/kinnikinnick- Cold to moderately cold	49	9,458 (8,800-9,940)	314 (0.32) 19 (2-39)	44 (33-61)	56 (41-75) 11 (5-19)	2 (0-24) 1 (0-18)	63 (26-120) 47 (14-160) 47 (1-151) 25 (0-210)	182.0 (55.0-473.0) 15 (4-35) 12.9 (2.4-26.3)
FD14 Douglas-fir/buffaloberry- Light-colored sandy cold soils-Northerly	26	9,666 (9,050-10,520)	320 (0.66) 38 (24-49)	65 (28-85)	88 (50-175) 6 (3-9)	7 (0-20) 2 (1-2)	74 (26-140) 67 (16-140) 18 (0-65) 18 (0-76)	176.5 (97.0-321.5) 15 (9-27) 13.0 (4.0-21.4)

*. Not sampled.

DOUGLAS-FIR/WAX CURRANT-ARIZONA FESCUE-COARSE THIN-DARK SOILS-STEEP

Douglas-fir/wax currant-Arizona fescue-
Gravelly or cobbly barely-Mollic Eutroboralfs or Argiborolls-Steep slopes, 7,600-10,000 ft

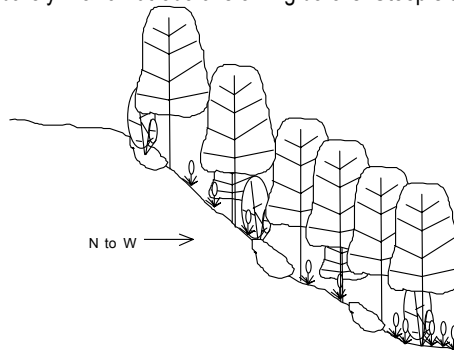


Figure 04-1. Cross-section of vegetation structure of *Douglas-fir/wax currant-Arizona fescue-Coarse thin-dark soils-Steep*. Aspects are northerly, and slope angles average 39%.

Douglas-fir/wax currant-Arizona fescue-Coarse thin-dark soils-Steep is a fairly common type at lower elevations in the UGB, making up forested islands on dry, steep, protected slopes where gravelly or cobbly soils occur outside the deep rainshadows. This type is characterized by the dominance of Douglas-fir (PSME) and wax currant (RICE). In some stands, ocean-spray (HOD1), big sagebrush (ARTR2), Arizona fescue (FEAR2), or mountain muhly (MUMO) may be conspicuous. See Table 04-7 for plant names and codes.

Originally, we classified this type as three types: Douglas-fir/wax currant, Douglas-fir/Arizona fescue, and Douglas-fir/Wheeler bluegrass (PONE2). The currant and fescue types were combined because the landforms and soils are closely related, both indicator species are present in most stands, and both species are palatable to herbivores, explaining the absence of one or both in some stands. The two stands representing Douglas-fir/Wheeler bluegrass were added because wax currant is present in both, and the landforms and soils are similar to both the currant and fescue types. The type named for wax currant has not been described elsewhere, but may occur scattered over the western slope of Colorado. The type named for Arizona fescue has been described from southern Colorado, west-central New Mexico, and northern Arizona.

This type is related to *Bristlecone pine/currant-Arizona fescue-Cold soils-Southeasterly*, which occurs on colder, shallower slopes in deep rainshadows near the Continental Divide. This Douglas-fir type occurs on warmer slopes with deeper soils outside of deep rainshadows, although it may be found in partial rainshadows. *Ponderosa pine/Arizona fescue-Light-colored clay soils* occurs on gentler slopes and southerly aspects. The plant association *Pseudotsuga menziesii/Ribes cereum-Festuca arizonica* is described as new

here, though it is somewhat similar to *Pseudotsuga menziesii/Festuca arizonica* of Fitzhugh (1983).

Vegetation, Climate, Soils

This type usually forms moderately dense stands on steep northerly slopes. A tall shrub layer of wax currant is absent to conspicuous at 0 to 30% cover. Graminoids and forbs are typically sparse, with total graminoid cover at <45% and total live cover at <125%. Lodgepole pine (PICO), Thurber fescue (FETH), and Parry oatgrass (DAPA2) are all absent. Saskatoon serviceberry (AMAL2) is usually absent, and always <0.1%.

Major natural disturbances in this type include spruce budworm-spruce beetle epidemics, and elk and deer browsing, where these stands are close to their winter range. This type is classified in Fire Group 8: the dry Douglas-fir habitat types in which limber pine is the seral dominant (Crane 1982), but limber pine is not often present in these stands in the UGB.

Adjacent to these stands, ponderosa pine communities occur on gentle benches with deeper soil. Yellow willow communities adjoin the type on poorly drained bottoms. Blue spruce-cottonwood riparian communities occur on adjacent higher-gradient streamcourses, while Big sagebrush/Arizona fescue types occur on adjacent sunny, non-northerly benches with shallow, rocky soils.

Moderately heavy to heavy grazing by cattle, sheep, deer, or elk tends to decrease wax currant, Arizona fescue, and other grasses.

Because horizontal obstruction averages moderate to moderately high, deer and elk use these stands for hiding cover, especially those that are near their winter range. There is little browse in these stands now, mostly in the form of sparse wax currant. Deer and elk browsing has probably caused decline in wax currant.

Table 04-4. Wildlife values (relative to the whole UGB) for the principal wildlife species using <i>Douglas-fir/wax currant-Arizona fescue-Coarse thin-dark soils-Steep</i> . "I" means the same as above.		
	Mule Deer	Elk
CT	Season-Preference	Season-Preference
A, B, C	Winter, Mild: Moderate (Cover, Browse) Winter, Severe: Low (too much snow) Spring/Fall: Moderate (Cover, Browse)	Winter, Mild: Moderately low (Cover, Browse) Winter, Severe: Low (too much snow) Spring/Fall: Low (Cover, Browse)
E, G	Winter, Mild: Mod. Low (Cover, Browse) Winter, Severe: Low (too much snow) Spring/Fall: Mod. Low (Cover, Browse)	Winter, Mild: Low (Cover, Browse) Winter, Severe: Low (too much snow) Spring/Fall: Mod. Low (Cover, Browse)
D, F	Winter, Mild: Low (Cover, Browse) Winter, Severe: Low (too much snow) Spring/Fall: Mod. Low (Cover, Browse)	

Summary of Ecological Type Characteristics

1. Explanation of symbols is found in Appendix C. Percentages in [brackets] indicate the percentage of plots sampled that have that characteristic.

NUMBER OF SAMPLES	31, soil descriptions from 9 of these; 1 more that doesn't fit into a CT (total 32)
ELEVATION	8,729 ft (7,600-10,000 ft); 2,661 m (2,316-3,048 m)
AVERAGE ASPECT	301°M (r = 0.33)
LITHOLOGY	Mostly igneous, with tuff, rhyolite, schist, granite, gneiss, and breccia; only one sedimentary, sandstone
FORMATIONS ¹	Taf-Tpl [55%], Xb-Xg [36%], Kd [9%]
LANDFORMS	Soil creep slopes
SLOPE POSITIONS	Backslopes and upper backslopes
SLOPE SHAPES	Linear both horizontally and vertically
SLOPE ANGLE	38.9% (14-100%)
SOIL PARENT MATERIAL	Colluvium [80%] or colluvium over residuum [20%]
COARSE FRAGMENTS	27.3% (4-72%) cover on surface, 63.6% (28-90%) by volume in soil
SOIL DEPTH	49 cm (8-124 cm); 19.2 in (3-49 in)
MOLLIC THICKNESS	13 cm (3-26 cm); 4.9 in (1-10 in)
TEXTURE	A wide variety of textures on surface and in subsurface
SOIL CLASSIFICATION	Eutroboralfs [58%], Argiborolls [33%], or Ustochrepts
TOTAL LIVE COVER	96.0% (37.4-268.8%)
NUMBER OF SPECIES	24.5 (13-40)
TOTAL LIVE COVER/NO. SPECIES	4.3% (1.9-10.6%)
CLIMATE	Outside rainshadow or in partial rainshadow. In the warmest, driest forested microclimates. Warm, moderately exposed to sun, slightly exposed to wind.
WATER	Moderately moist sites, because of some snow deposition and retention on northerly aspects. No permanent water in or near sites.

Key to Community Types

1. Wax currant absent to <5% cover. Arizona fescue >15% cover, often >25%. Douglas-fir >50% cover.....**A**
 1. Wax currant absent to >30% cover. Arizona fescue usually <15% cover, always <25%. Douglas-fir 10-75% cover.....(2)
 2. Wax currant >10% cover**C**
 2. Wax currant <10% cover(3)
 3. Arizona fescue >15% cover. Ponderosa pine >20% cover, sometimes dominating Douglas-fir**B**
 3. Arizona fescue <15% cover. Ponderosa pine absent to <10% cover(4)
 4. Wheeler bluegrass (PONE2) present and >1% cover. Ocean-spray present and >1% cover.....**E**
 4. Wheeler bluegrass usually absent, but occasionally up to 5% cover. Ocean-spray usually absent, but sometimes present. Wheeler bluegrass and ocean-spray never present together(5)
 5. Arizona fescue present and >1% cover.....**F**
 5. Arizona fescue usually absent, always <1% cover(6)
 6. Douglas-fir >40% cover **D**
 6. Douglas-fir <40% cover **G**
-

Community Type Descriptions

- A** *Douglas-fir-Arizona fescue*. Douglas-fir cover is >50%, and Arizona fescue cover is >15%. Shrubs are inconspicuous, though wax currant, sagebrush, or pingue cover reach 5%.
- B** *Ponderosa pine-Douglas-fir-Arizona fescue-wax currant* resembles **A**, but includes more ponderosa pine than Douglas-fir. Arizona fescue cover is >15%, and wax currant is present at >3% cover.
- C** *Douglas-fir-wax currant-sagebrush-Arizona fescue* has conspicuous shrub layers, with wax currant at >10% cover and big sagebrush cover usually >10%. Arizona fescue is always present, but may be inconspicuous.
- D** *Douglas-fir-sparse wax currant-grasses* is the sparsest of the community types, with total graminoid, shrub, and forb cover usually <30%, respectively. Wax currant is always present but in small quantity. Arizona fescue is usually absent.
- E** *Douglas-fir-tree juniper-Wheeler bluegrass-sparse wax currant* is distinguished by the presence of Wheeler bluegrass (PONE2) at >1% cover. Rocky Mountain juniper (JUSC2) is always present, contributing as much as 10% cover. Ocean-spray is always present, but is usually sparse. Arizona fescue is absent or <1% cover. Soils, landforms, and associated species are too closely related to separate this community into a separate type.
- F** *Douglas-fir-sparse Arizona fescue* includes sparse shrubs and forbs. Ocean-spray is absent, and wax currant is absent to sparse. Arizona fescue is always present at >1% cover.
- G** *Douglas-fir-sparse wax currant*. Wax currant is always present at >1% cover. Arizona fescue is absent. Ocean-spray may be conspicuous.

Plot Not Assigned to a Community Type

- One related community had Douglas-fir and aspen in the overstory, and a sparse understory with Wheeler bluegrass, but no Arizona fescue, wax currant, or ocean-spray.
-

Table 04-5. Community types within *Douglas-fir/wax currant-Arizona fescue-Coarse thin-dark soils-Sleep.*

CT	No. Samples	Elevation, ft Slope, %	Coarse, % Depth, cm Mollic Depth, cm	Surface Coarse, % Bare, % Seral Stage	Layer Height, m	Avg Lyr Cvr %	Cover, %: Trees Shrubs Graminoids Forbs	No. Species Total Live Cover, % TLC/NS, %	Obstruction %: 1.5-2.0 m 1.0-1.5 m 0.5-1.0 m 0.0-0.5 m Total<2m
A. Douglas-fir-Arizona fescue	4	9,235 (8,580-9,920) 33.0 (14-45)	63 (47-72) 76 (46-124) 17 (12-21)	26 (13-46) 6 (2-8) LS	T1 12 (5-20) T2 4 (2-8) T3 1.0 (0.2-2.5) S1 0.8 (0.6-1.5) S2 0.5 (0.2-0.7) GF 0.3 (0.0-0.8) S3 0.1 (0.0-0.4) M 0.0 L 0.0	47.9 13.3 1.9 0.3 T 47.2 T 0.8 0.8	57 (51-68) 11 (0-32) 55 (17-115) 20 (2-71)	29 (23-34) 143 (88-269) 4.8 (2.8-7.9)	25 (0-70) 28 (10-40) 18 (5-30) 68 (65-70) 35 (21-49)
B. Ponderosa pine-Douglas-fir-Arizona fescue-wax currant	2	9,880 31	* * *	5 60 LM	*		36 (32-40) 26 (7-45) 50 (35-65) 3 (3-4)	19 (17-21) 116 (87-144) 6.3 (4.1-8.5)	*
C. Douglas-fir-wax currant-sagebrush-Arizona fescue	5	8,388 (7,600-9,400) 26.0 (15-40)	35 55 9	38 15 LM	T1 * T2 * T3 * S1 * S2 * GF * S3 * M Missing L Missing	27 T T 19 8 37 2 M M	38 (30-45) 44 (20-81) 17 (11-33) 4 (1-17)	19 (13-36) 103 (85-138) 6.2 (2.8-10.6)	*
D. Douglas-fir-sparse wax currant-grasses	4	8,711 (8,400-9,305) 54.0 (34-70)	60 (55-66) 50 (31-69) 20 (13-26)	21 (8-31) 5 (1-12) MS	T1 15 T2 8 T3 * S1 Missing S2 0.5 (0.3-0.6) GF 0.3 (0.0-0.6) S3 0.2 (0.0-0.3) M 0.0 L 0.0	59 11 T M 5 15 6 3 1	66 (52-75) 8 (6-13) 16 (0-33) 8 (0-30)	31 (26-37) 98 (79-121) 3.2 (2.2-4.2)	23 (0-45) 20 (0-40) 35 (30-40) 73 (60-85) 38 (29-46)
E. Douglas-fir-tree juniper-Wheeler bluegrass-sparse wax currant	6	8,110 (7,900-8,539) 54.8 (32-100)	58 55 6	8 5 MS	T1 16 (12-20) T2 9 (3-14) T3 2.1 (0.4-3.0) S1 0.8 (0.4-1.5) S2 0.3 (0.0-0.5) GF 0.2 (0.0-0.7) S3 Missing M Missing L Missing	34 24 10 T 8 48 M M M	54 (41-61) 8 (4-18) 12 (3-45) 3 (2-5)	18 (14-30) 77 (57-129) 4.3 (3.0-5.2)	45 35 35 75 48
F. Douglas-fir-sparse Arizona fescue	6	8,963 (8,410-10,000) 30.3 (18-40)	58 (28-82) 40 (23-55) 11 (3-18)	27 (4-52) 4 (0-9) EM	T1 20 T2 9 (4-12) T3 3.5 (1.0-4.0) S1 1.7 (1.0-2.1) S2 0.5 (0.1-1.2) GF 0.3 (0.0-0.6) S3 0.1 (0.0-0.3) M 0.0 L 0.0	25.0 15.7 T T 6.7 23.9 2.4 1.1 3.6	47 (27-71) 19 (1-41) 21 (13-31) 8 (0-21)	30 (19-40) 95 (70-137) 3.6 (1.9-7.2)	33 (0-100) 22 (0-60) 28 (0-55) 55 (20-75) 35 (5-71)
G. Douglas-fir-sparse wax currant	4	8,958 (8,020-10,000) 36.7 (23-57)	85 (80-90) 29 (8-48) 9 (3-13)	48 (30-72) 2 (1-4) ES	T1 Missing T2 8 (4-12) T3 1.8 (0.6-4.0) S1 Missing S2 0.7 (0.4-1.6) GF 0.1 (0.0-0.4) S3 Missing M 0.0 L 0.0	M 21.3 1.3 M 25.5 14.5 M 5.1 1.6	28 (20-41) 21 (17-28) 5 (0-12) 4 (0-13)	24 (16-34) 57 (37-70) 2.6 (2.0-4.0)	28 (15-50) 30 (5-45) 35 (20-45) 63 (45-80) 39 (26-55)

*. Unknown: measurements were not taken in this CT.

Table 04-6. Resource Values for <i>Douglas-fir/wax currant-Arizona fescue-Coarse thin-dark soils-Steep</i> . Resource values were calculated from the numbers in Table 04-5, relative to the whole UGB.															
The numbers in this table can be translated: 0 = Very Low, 1 = Low, 2 = Moderately Low, 3 = Moderate, 4 = Moderately High, 5 = High, and 6 = Very High.															
Community Type								Community Type							
Resource Value	A	B	C	D	E	F	G	Resource Value	A	B	C	D	E	F	G
Potential Cattle Forage Production	2-3	2-3	1-2	1-2	1	1	0	Deer & Elk Forage & Browse	3	3	3	2	2	2	3
Grazing Suitability	1	1	1	1	0	0	0	Need for Watershed Protection	3	3	3	3	3	3	3
Timber Production	2-3	2-3	2	2	2	2	2	Soil Stability	3	3	2-3	2-3	2-3	2	2
Timber Suitability	1	1	1	0	0	1	1	Risk of Soil Loss-Natural	3	3	3-4	3-4	3-4	4	4
Developed Recreation	0-1	0-1	0-1	0-1	0-1	0-1	0-1	Risk of Soil Loss-Management	4-5	4-5	5	5	5	5	5
Dispersed Recreation	1	1	1	1	1	1	1	Risk of Permanent Depletion-Range	0-1	0-1	0-1	0	0	0-1	0-1
Scenic	0-1	1	1	0-1	0-1	1	1	Risk of Permanent Depletion-Wildlife	3-4	3-4	3-4	3	3	2-3	2-3
Road & Trail Stability	1	1	1	1	1	1	1	Risk of Permanent Depletion-Timber	ns ¹	ns ¹	ns ¹	ns ¹	ns ¹	ns ¹	ns ¹
Construction Suitability	0	0	0	0	0	0	0	Resource Cost of Management	4	4	3	3	3	3	3
Deer & Elk Hiding Cover	2-4	3	3	3-4	4	3-4	3-5	Cost of Rehabilitation	2-3	2-3	3	3	3	3	3

¹ – Unsuitable – too steep



An example of Douglas-fir/wax currant (Community Type E). Douglas-fir 54% cover, Wheeler bluegrass 33%, bottlebrush squirreltail 12%, snowberry 8%, a trace of wax currant. Soil sampled as a Mollic Glossoboralf, Clayey-Skeletal, Mixed. Iris NW Quadrangle, elevation 8,540 ft, 37° 32'30" (NW) slope. June 14, 1995.

Table 04-7. Common Species in *Douglas-fir/wax currant-Arizona fescue-Coarse thin-dark soils-Steep*, where Characteristic cover > 10% or Constancy > 20%. "-" means that the species is not found. Dead cover is not listed. Ccv = Characteristic Cover, Con = Constancy. If Avc = Average Cover, then these are related using the formula $Avc = Ccv \cdot 100\% / Con$.

		C O M M U N I T Y T Y P E							
		A	B	C	D	E	F	G	
Code	Species	Ccv(Con) N = 4	Ccv(Con) 2	Ccv(Con) 5	Ccv(Con) 4	Ccv(Con) 6	Ccv(Con) 6	Ccv(Con) 4	Common Name
TREES									
JUSC2	Juniperus scopulorum	3 (50)	– –	9 (80)	1 (75)	7(100)	3 (67)	8 (50)	Rocky Mtn. juniper
PIPO	Pinus ponderosa	6 (50)	28(100)	T (20)	T (25)	– –	3 (50)	– –	ponderosa pine
PSME	Pseudotsuga menziesii	53(100)	8(100)	30(100)	65(100)	47(100)	39(100)	24(100)	Douglas-fir
SHRUBS									
AMAL2	Amelanchier alnifolia	T (25)	– –	T (40)	T (50)	– –	– –	T (50)	Saskatoon serviceberry
ARUV	Arctostaphylos uva-ursi	– –	– –	1 (20)	– –	1 (50)	1 (67)	– –	kinnikinnick
ARTR2	Artemisia tridentata	3 (75)	10 (50)	17(100)	T (50)	5 (33)	16 (67)	7 (50)	big sagebrush
HODI	Holodiscus discolor	– –	– –	– –	– –	1(100)	– –	11 (50)	ocean-spray
JUCO6	Juniperus communis	1 (75)	5 (50)	– –	T (50)	T (17)	4 (50)	T (50)	common juniper
MARE11	Mahonia repens	T (25)	– –	T (20)	T (25)	1 (33)	1 (33)	T (25)	Oregon-grape
PUTR2	Purshia tridentata	T (75)	25 (50)	2 (80)	T (25)	1 (50)	T (33)	T (50)	antelope bitterbrush
QUGA	Quercus gambelii	– –	– –	1 (60)	– –	1 (83)	– –	– –	scrub oak
RICE	Ribes cereum	1 (50)	4(100)	20(100)	2(100)	1(100)	2 (67)	6(100)	wax currant
SYRO	Symphoricarpos rotundifolius	8 (75)	– –	6 (80)	4(100)	6 (50)	4 (83)	10 (50)	mountain snowberry
GRAMINOIDS									
CAGE	Carex geophila	T (25)	3 (50)	2 (80)	T (25)	1 (50)	2 (67)	T (50)	dryland sedge
CAGE2	Carex geyeri	16 (50)	30 (50)	5 (40)	5 (50)	– –	2 (33)	T (25)	elk sedge
ELEL5	Elymus elymoides	4 (50)	5 (50)	3 (40)	2 (25)	3(100)	2 (83)	1 (75)	bottlebrush squirreltail
FEAR2	Festuca arizonica	29(100)	22(100)	7(100)	1 (25)	1 (83)	6(100)	– –	Arizona fescue
KOMA	Koeleria macrantha	4 (75)	3(100)	T (40)	3 (75)	– –	5 (50)	– –	prairie junegrass
POFE	Poa fendleriana	13 (50)	10 (50)	5 (80)	13 (50)	– –	9 (67)	5 (75)	muttongrass
PONE2	Poa nervosa	– –	– –	– –	– –	8(100)	– –	T (25)	Wheeler bluegrass
FORBS									
ACLA5	Achillea lanulosa	1 (50)	– –	1 (20)	1 (50)	– –	1 (50)	1 (25)	western yarrow
ANSE4	Androsace septentrionalis	T (25)	– –	1 (20)	T (25)	1 (33)	1 (33)	1 (25)	northern rock-jasmine
BOCR3	Boechera crandallii	– –	– –	1 (40)	– –	1 (50)	1 (17)	T (50)	Crandall rock cress
ERSP4	Erigeron speciosus	11 (25)	– –	– –	– –	– –	– –	– –	Oregon fleabane
LAL2	Lathyrus leucanthus	17 (25)	– –	– –	– –	– –	– –	– –	aspen peavine
PECA4	Penstemon caespitosus	T (50)	– –	– –	T (25)	1 (83)	T (33)	– –	beardtongue
GROUND COVER									
BARESO	bare soil	6(100)	60 (50)	15 (20)	5(100)	5 (17)	4 (50)	2 (50)	
LITTER	litter and duff	67(100)	35 (50)	47 (20)	73(100)	88 (17)	69 (67)	50 (75)	
GRAVEL	gravel 0.2-10 cm	10	–	3	1	1	3	11	
COBBLE	cobble 10-25 cm	5 (75)	– –	22 (20)	10 (75)	5 (17)	8 (67)	9 (75)	
STONES	stone > 25 cm	3 (50)	– –	9 (20)	11 (75)	1 (17)	17 (50)	20 (75)	
MOSSON	moss on soil	3 (25)	– –	– –	3 (50)	– –	2 (33)	10 (25)	
LICHENS	lichens on soil	2	2	–	3	–	2	3	

Douglas-fir/serviceberry–Thin-dark Frigid soils–
Steep northerly backslopes or shoulders, 7,900-10,000 ft

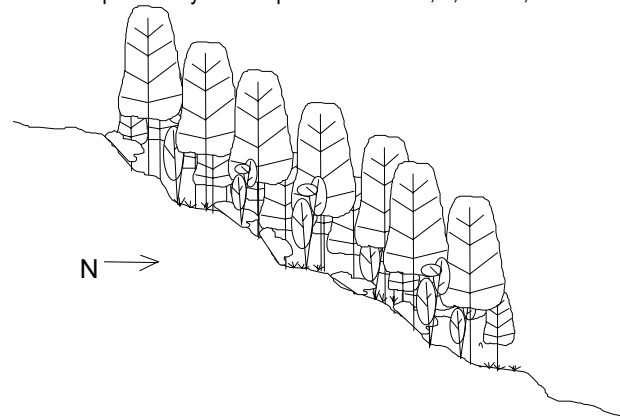


Figure 04-2. Cross-section of vegetation structure of *Douglas-fir/serviceberry–Steep northerly*. Aspects are northerly, and slope angles average 37%.

Douglas-fir/serviceberry–Steep northerly is a very common type on steep northerly slopes at lower elevations. In the UGB, it is the common Douglas-fir type on the northerly upper slopes of mesas, hanging above the valley bottoms. It is found outside rainshadows on soils with a thin Mollic horizon, hence “thin-dark” in the name. It has also been described from northern Utah and southwestern Idaho. *Douglas-fir/serviceberry–Steep northerly* is characterized by Douglas-fir (PSME) and Saskatoon serviceberry (AMAL2). Common associates include aspen (POTR5), snowberry (SYRO), and elk sedge (CAGE2). Some stands at higher elevations support Thurber fescue (FETH) in the understory. See Table 04-11 for common species names and codes.

Douglas-fir/serviceberry–Steep northerly is related to *Douglas-fir/pachistima–Dark soils–Northerly*, which occurs at slightly higher elevations and on slightly gentler slopes, and has no serviceberry. Pachistima (PAMY) occurs in about half of *Douglas-fir/serviceberry–Steep northerly* stands.

Douglas-fir/serviceberry–Steep northerly is also related to *Douglas-fir/elk sedge–Cold to moderately cold–Gentle to steep*, which occurs at higher elevations and sometimes on gentler slopes, and lacks both serviceberry and pachistima. Some lower-elevation stands of *Douglas-fir/elk sedge–Cold to moderately cold–Gentle to steep* may once have supported serviceberry which was browsed out.

This type is also related to *Aspen/ serviceberry-snowberry–Deep dark soils*, which occurs on deeper, darker soils, lacks conifers, and generally lacks such conifer indicators such as kinnikinnick (ARUV), Oregon-grape (MARE11), and pachistima.

The plant association *Pseudotsuga menziesii/Amelanchier alnifolia* was described by Mauk 1984. *Pseudotsuga menziesii/ Amelanchier alnifolia* phase *Populus tremuloides-Carex geyeri* is described as new here. *Pseudotsuga menziesii/Amelanchier alnifolia* phase *Acer glabrum* is a new name for *Pseudotsuga menziesii/Acer glabrum* (Steele 1979, Mauk 1984).

Ponderosa pine communities adjoin this type on gentle benches at higher elevations with deeper soil. Tall willow communities (yellow or serviceberry willows) are adjacent in poorly drained bottoms. Blue spruce-cottonwood riparian communities border this type in higher-gradient stream courses, and big sagebrush/ Arizona fescue communities may be adjacent on sunny non-northerly, shallow, rocky benches.

This type is typically a moderately dense to dense stand of Douglas-fir, sometimes mixed with aspen, lodgepole pine (PICO), or Rocky Mountain juniper (JUSC2). Saskatoon serviceberry should be conspicuous at later seral stages, but may be absent to inconspicuous because of browsing. Serviceberry is the most palatable shrub to herbivores in the UGB, and is critical food for deer, somewhat less critical for elk. Where these stands occur near water sources, serviceberry may be browsed by cattle as well. All these stands were probably grazed in the past by cattle.

All stands have >0.1% Saskatoon serviceberry or other palatable tall shrubs. Serviceberry may be partially or completely replaced by other palatable tall shrubs, such as maple (ACGL) or chokecherry (PAV111). Heavily browsed stands feature less cover of palatable tall shrubs.

Major disturbances include spruce budworm-spruce beetle epidemics, and elk and deer browsing, where these stands are close to their winter range. Fire also occurs periodically. Stands of this type are classified as Fire Group 8, which includes the dry, Douglas-fir habitat types in which limber pine is the seral dominant (Crane 1982), although limber pine is rarely present in the stands in the UGB.

Moderately heavy to heavy grazing by cattle, sheep, deer, or elk tends to decrease sedge and grass cover. Most stands are unsuitable for livestock grazing because of poor forage quality, steepness of slopes, and distance to water. Horizontal obstruction averages moderately high to high. Deer commonly use these stands for cover and browsing, since obstruction is high, and plants such as serviceberry, maple, and chokecherry are highly palatable. Elk use is somewhat less. Many sites have been heavily used by elk and deer, because they are near their winter range. See Table 04-8 for elk and deer seasonal preferences by community type.

Table 04-8. Wildlife values (relative to the whole UGB) for the principal wildlife species using Douglas-fir/serviceberry–Steep northerly. “ ” means the same as above.		
CT	Mule Deer	Elk
	Season–Preference	Season–Preference
A, D, F, G	Winter, Mild: Mod. High to High (Cover, Browse) Winter, Severe: Moderate (Cover, Browse) Spring/Fall: High (Cover, Browse, Overnight)	Winter, Mild: Mod. High to High (Cover, Browse) Winter, Severe: Low (Cover, Browse) Spring/Fall: High (Cover, Browse, Overnight)
B, C	Winter, Mild: Mod. High (Cover, Browse) Winter, Severe: Mod. Low (Cover, Browse) Spring/Fall: Mod. High to High (Cover, Browse, Overnight)	Winter, Mild: Moderate (Cover, Browse) Winter, Severe: Low (Cover, Browse) Spring/Fall: Mod. High (Cover, Browse, Overnight)
E, H	Winter, Mild: Moderate (Cover, Browse) Winter, Severe: Low (Cover, Browse) Spring/Fall: Mod. High (Cover, Browse, Overnight)	

Summary of Ecological Type Characteristics

1. Explanation of symbols is found in Appendix C. Percentages in [brackets] indicate the percentage of plots sampled that have that characteristic.

NUMBER OF SAMPLES	35; soil descriptions from 10 of these; 1 more that doesn't fit into a CT (total 36)
ELEVATION	8,875 ft (7,960-9,920 ft) = 2,705 m (2,426-3,023 m)
AVERAGE ASPECT	357°M (r = 0.64)
LITHOLOGY	Igneous, for example Tuff and welded tuff [60%], gneiss, breccia, and granite
FORMATIONS ¹	Taf [50%], Tpl. Xfh, Xg, and Tos
LANDFORMS	Soil creep slopes
SLOPE POSITIONS	Backslopes [50%], upper backslopes, and shoulders
SLOPE SHAPES	Concave [60%] to linear [40%] horizontally
LINEAR	[90%] vertically
SLOPE ANGLE	36.9% (8-66%)
SOIL PARENT MATERIAL	Colluvium [80%]
COARSE FRAGMENTS	13.9% (0-80%) cover on surface, 59.1% (22-85%) by volume in soil
SOIL DEPTH	69 cm (33-180 cm) = 27.1 in (13-71 in)
MOLLIC THICKNESS	15 cm (0-48 cm) = 5.9 in (0-19 in)
TEXTURE	A wide variety of textures both on surface and in subsurface
SOIL CLASSIFICATION	Haploborolls [36%], Glossoboralfs [36%], or Ustochrepts [18%]
TOTAL LIVE COVER	243.7% (68.2-491.5%)
NUMBER OF SPECIES	25.1 (12-51)
TOTAL LIVE COVER/NO. SPECIES	11.2% (2.8-26.1%)
CLIMATE	In partial rainshadow or outside rainshadow. Cool, dry forest.
WATER	Soil moisture may be maintained through the season by litter and duff on the surface, only in stands where the surface is not disturbed. No permanent water in or near sites.

Key to Community Types

1. Serviceberry >25% cover. Aspen absent or <25% cover**A**
 1. Serviceberry usually <25% cover, always <30%. Aspen often present, 0-90% cover.....(2)
 2. Serviceberry 10-30% cover. Aspen conspicuous, dominating Douglas-fir, usually >40% cover. Douglas-fir >1% cover, usually >10%. Maple usually absent**B**
 2. Serviceberry 0-20% cover, often absent or <10%. Aspen absent or conspicuous. Maple absent or present....(3)
 3. Lodgepole pine present and >25% cover **H**
 3. Lodgepole pine usually absent, in any case <25% cover.....(4)
 4. Aspen >40% cover. Douglas-fir inconspicuous, <1% cover. Serviceberry >10% cover..... **D**
 4. Without the above combination of characteristics (5)
 5. Maple the dominant tall shrub, 2-40% cover **C**
 5. Maple absent or <1% cover (6)
 6. Elk sedge absent to <5% cover. Aspen absent or <0.5% cover..... **F**
 6. Elk sedge conspicuous, >15%. Aspen conspicuous or absent..... (7)
 7. Aspen dominant over Douglas-fir **G**
 7. Douglas-fir dominant over aspen.....**E**
-

Community Type Descriptions

- A** *Douglas-fir-serviceberry-snowberry-muttongrass* has serviceberry cover >15% and snowberry cover >20%. Muttongrass is usually conspicuous, but Thurber fescue is absent to <0.1% cover. One plot had >15% cover of chokecherry.
- B** *Douglas-fir-aspen-common juniper-serviceberry-Thurber fescue-elk sedge* usually has aspen dominating Douglas-fir. Serviceberry is >10% cover. The medium shrub layer is well developed, with common juniper and/or snowberry conspicuous, one or both >20% cover.
- C** *Douglas-fir-maple-rose-snowberry* has serviceberry instead of maple in the tall shrub layer. Two stands had aspen dominating Douglas-fir, and another had conspicuous tree juniper (JUSC2).
- D** *Aspen-serviceberry-common juniper-snowberry-bedstraw* has aspen dominant over Douglas-fir, which is absent to <0.5%. Serviceberry cover is >10%. One stand had >20% cover of chokecherry.
- E** *Douglas-fir-sparse serviceberry-elk sedge-Oregon-grape* has a moderately sparse layer of Douglas-fir (30-55% cover) and sparse serviceberry (<5% cover). Aspen may be present or even conspicuous, but is always dominated by Douglas-fir. Elk sedge is conspicuous and >15% cover.
- F** *Douglas-fir-sparse serviceberry-Oregon-grape-sparse snowberry* has a moderate to dense layer of Douglas-fir (40-90% cover) and sparse serviceberry (<10% cover). Aspen is usually absent to very minor. Elk sedge is absent.
- G** *Aspen-common juniper-elk sedge-sparse serviceberry-sparse snowberry* has aspen dominant over Douglas-fir, sparse serviceberry (<2% cover), and abundant elk sedge (>60% cover).
- H** *Lodgepole pine-aspen-Douglas-fir-kinnikinnick-elk sedge-sparse serviceberry* has lodgepole pine dominant over both aspen and Douglas-fir, with serviceberry 1-10% cover.

Plot Not Assigned to a Community Type (1)

- One plot with lodgepole pine (45% cover) over Douglas-fir (10%) and Engelmann spruce (5%). The understory is sparse, with 0.2% serviceberry, 4% kinnikinnick, and 7% common juniper.
-

Table 04-9. Community types within *Douglas-fir/serviceberry–Steep northerly*.

CT	No. Samples	Elevation, ft Slope, %	Coarse, % Depth, cm Mollic Depth, cm	Surface Coarse, % Bare, % Seral Stage	Avg			Cover, %: Trees Shrubs Graminoids Forbs	No. Species Total Live Cover, % TLC/NS, %	Obstruction %: 1.5-2.0 m 1.0-1.5 m 0.5-1.0 m 0.0-0.5 m Total<2m
					Lr	Layer Height, m	Lyr Cvr %			
A. Douglas-fir-serviceberry-snowberry-muttongrass	4	8,733 (8,300-9,000) 34.9 (19-60)	71 (64-85) 96 (35-180) 11 (2-28)	4 (0-9) 8 (5-9) LS	T1 T2 T3 S1 S2 S3 GF M L	16 (12-21) 11 (6-13) 4.4 (0.8-12) 2.3 (1.0-5) 0.8 (0.3-1.6) 0.3 (0.0-0.7) 0.3 (0.0-1.5) 0.0 0.0	35.5 8.8 13.1 29.3 26.5 30.9 45.0 2.4 0.2	55 (14-98) 90 (65-141) 40 (28-68) 17 (0-50)	33 (27-38) 201 (169-235) 6.1 (5.8-6.3)	85 (50-100) 71 (30-95) 85 (70-100) 91 (80-100) 83 (60-98)
B. Douglas-fir-aspen-common juniper-serviceberry-Thurber fescue-elk sedge	9	9,275 (8,300-9,500) 19.0 (8-30)	* * *	* * LM		*		87 (56-112) 76 (40-141) 118 (91-140) 86 (3-185)	20 (17-24) 368 (254-471) 18.9 (14.1-26.1)	*
C. Douglas-fir-maple-rose-snowberry	5	8,900 (8,600-9,400) 54.5 (25-66)	68 (63-77) 56 (33-81) 13 (8-26)	15 (1-40) 4 LM	T1 T2 T3 S1 S2 S3 GF M L	17 (12-24) 8 (6-15) 2.8 (0.3-8) 3.6 (1.2-7) 1.3 (0.5-2.0) 0.3 (0.0-0.7) 0.3 (0.0-0.9) 0.0 0.0	54.1 17.7 14.3 11.3 14.3 9.1 23.6 11.3 1.9	106 (56-211) 40 (10-70) 25 (2-67) 34 (0-108)	32 (21-51) 206 (103-456) 7.7 (3.4-21.7)	54 (25-75) 44 (10-70) 48 (0-70) 78 (30-100) 56 (16-75)
D. Aspen-serviceberry-common juniper-snowberry-bedstraw	3	8,720 (8,720-8,720) 36.0 (36-36)	52 51 35	2 5 MS	T1 T2 T3 S1 S2 S3 GF M L	Missing 3.5 (2.5-5.5) 1.7 (0.6-3.0) 2.1 (1.0-2.6) 0.6 (0.1-1.5) 0.1 (0.1-0.1) 0.5 (0.0-1.2) 0.0 Missing	M 53 8 17 25 20 61 1 M	67 (46-102) 92 (36-165) 113 (51-166) 77 (37-115)	23 (17-31) 349 (218-492) 16.8 (7.0-23.4)	80 60 90 100 83
E. Douglas-fir-sparse serviceberry-elk sedge-Oregon-grape	5	9,105 (7,960-9,920) 27.1 (11-58)	50 56 (56-56) 24 (24-24)	29 (1-80) 9 (1-15) MS		*		66 (38-95) 55 (39-68) 43 (30-66) 27 (2-96)	25 (12-40) 191 (125-314) 9.2 (4.4-17.4)	20 25 25 55 31
F. Douglas-fir-sparse serviceberry-Oregon-grape-sparse snowberry	4	8,610 (8,380-8,960) 45.6 (32-55)	51 (35-74) 69 (45-79) 17 (0-48)	11 (3-31) 2 (1-4) MS	T1 T2 T3 S1 S2 S3 GF M L	18 (5-30) 9 (2-15) 1.4 (1.0-2.0) 2.5 (1.0-5.0) 0.8 (0.3-1.0) 0.1 (0.0-0.3) 0.2 (0.0-0.5) 0.0 0.0	67.4 12.7 2.5 1.6 2.4 7.1 20.0 6.2 1.5	73 (52-86) 13 (3-31) 20 (0-40) 3 (0-5)	29 (24-36) 110 (68-153) 3.8 (2.8-4.6)	88 (75-100) 80 (65-95) 83 (65-100) 78 (65-90) 82 (68-96)
G. Aspen-common juniper-elk sedge-sparse serviceberry-sparse snowberry	2	8,830 16	22 46 0	3 0 EM		*		104 (77-131) 32 (23-41) 80 (69-91) 19 (6-32)	23 (19-26) 235 (194-277) 11.0 (7.4-14.6)	80 55 65 90 73
H. Lodgepole pine-aspen-Douglas-fir-kinnikinnick-elk sedge-sparse serviceberry	3	* *	* * *	* * EM		*		82 (42-110) 34 (23-47) 41 (5-77) 2 (1-2)	18 (12-26) 158 (71-204) 9.0 (5.9-13.2)	*

*. Unknown: measurements were not taken in this CT.

Table 04-10. Resource Values for <i>Douglas-fir/serviceberry</i> – <i>Steep northerly</i> .																	
Resource values were calculated from the numbers in Table 04-9, relative to the whole UGB.																	
The numbers in this table can be translated: 0 = Very Low, 1 = Low, 2 = Moderately Low, 3 = Moderate, 4 = Moderately High, 5 = High, and 6 = Very High.																	
C o m m u n i t y T y p e									C o m m u n i t y T y p e								
Resource Value	A	B	C	D	E	F	G	H	Resource Value	A	B	C	D	E	F	G	H
Potential Cattle Forage Prod.	2-3	2-3	2	2-3	2	1-2	1-2	1-2	Deer & Elk Forage & Browse	3-4	3-4	3-4	3	2	2	1-2	1-2
Grazing Suitability	1	2-3	1	2	1-2	1	2-3	2-3	Need for Watershed Protection	4	4	4	4	5	5	5	5
Potential Timber Production	2-3	2-3	2	2-3	2-3	3	2-3	2-3	Soil Stability	2	2	2	2	2	2	1-2	3
Timber Suitability	ns ¹	1	ns ¹	1	ns ¹	ns ¹	1	1-2	Risk of Soil Loss-Natural	4	4	4	4	4	4	4-5	3
Developed Recreation	1-2	1	1-2	1-2	1-2	1-2	1	1-2	Risk of Soil Loss-Management	4	4	4	4	3	3	3	3
Dispersed Recreation	2-3	2-3	2-3	2	2	2	2	2	Risk Permanent Depletion-Range	1-2	1-2	1-2	1-2	2	2	2	2
Scenic	1-2	1-2	1-2	1-2	2-3	2-3	2-3	2-3	Risk Permanent Depletion-Wildlife	3-4	3-4	3-4	4	4	4	4	4
Road & Trail Stability	2	2	2	2	1-2	1-2	1-2	1-2	Risk Permanent Depletion-Timber	ns ¹	1	ns ¹	1	ns ¹	ns ¹	1	1
Construction Suitability	1	1	1	1	0	0	0	0	Resource Cost of Management	4	4	4	4	4	4	4-5	4
Deer & Elk Hiding Cover	5-6	4	2-5	5	3	5-6	6	4	Cost of Rehabilitation	2-3	2-3	2-3	2	2	2	2	3

1. ns = Not suitable.



A Douglas-fir/serviceberry stand (Community Type A). These trees have been hit hard by insects, hence the brown foliage. Douglas-fir 74% cover, aspen 22%, kinnikinnick 20%, serviceberry 16%. Coarse fragments 6% cover, Total Live Cover 191%, Soil Coarse Fragments 51%. Soil sampled as a Lithic Argiboroll, Clayey-Skeletal over Fragmental, Mixed. Signal Peak Quadrangle, elevation 9,000 ft, 19% 354° (N) slope. July 6, 1994.



Another Douglas-fir/serviceberry stand (Community Type F). Douglas-fir 75% cover, littleseed ricegrass 25%, snowberry 8%, serviceberry 0.2%. Soil sampled as a Pachic Haploboroll, Loamy-Skeletal. Sapinero Quadrangle, elevation 8,380 ft, 50% 004° (N) slope. July 29, 1992.

Table 04-11. Common Species in *Douglas-fir/serviceberry-Steep northerly*, where Characteristic cover > 10% or Constancy > 20%. "-" means that the species is not found. Dead cover is not listed. Ccv = Characteristic Cover, Con = Constancy. If Avc = Average Cover, then these are related using the formula $Avc = Ccv \cdot 100\% / Con$.

		C O M M U N I T Y T Y P E								
		A	B	C	D	E	F	G	H	
Code	Species	Ccv(Con) N = 4	Ccv(Con) 9	Ccv(Con) 5	Ccv(Con) 3	Ccv(Con) 5	Ccv(Con) 4	Ccv(Con) 2	Ccv(Con) 3	Common Name
TREES										
PICO	Pinus contorta	— —	4 (33)	— —	— —	— —	— —	10 (50)	49(100)	lodgepole pine
PIPO	Pinus ponderosa	— —	8 (44)	— —	— —	45 (20)	9 (25)	— —	16 (33)	ponderosa pine
POTR5	Populus tremuloides	11 (50)	54 (89)	58 (80)	67(100)	24 (60)	T (50)	90(100)	16(100)	quaking aspen
PSME	Pseudotsuga menziesii	49(100)	35(100)	56(100)	1 (67)	42(100)	71(100)	11 (50)	12(100)	Douglas-fir
SHRUBS										
ACGL	Acer glabrum	T (25)	1 (11)	18(100)	— —	— —	— —	— —	— —	Rocky Mountain maple
AMAL2	Amelanchier alnifolia	41(100)	11(100)	3 (40)	18(100)	2(100)	3(100)	1(100)	5(100)	Saskatoon serviceberry
ARUV	Arctostaphylos uva-ursi	13 (50)	20 (22)	— —	26 (33)	4 (20)	— —	1 (50)	10(100)	kinnikinnick
CEFE	Ceanothus fendleri	— —	— —	— —	— —	— —	— —	— —	10 (33)	buckbrush
JUCO6	Juniperus communis	16 (25)	23(100)	6 (80)	11(100)	28 (60)	T (75)	13(100)	6 (67)	common juniper
MARE11	Mahonia repens	T (25)	5 (33)	1 (40)	— —	7(100)	1(100)	1 (50)	1 (67)	Oregon-grape
PAV111	Padus virginiana	18 (25)	28 (22)	— —	30 (33)	1 (20)	2 (25)	— —	— —	common chokecherry
PAMY	Paxistima myrsinites	5 (75)	13 (22)	1 (60)	— —	9 (80)	T (25)	15 (50)	— —	mountain-lover
RICE	Ribes cereum	— —	3 (22)	4 (40)	— —	1 (20)	1 (50)	— —	1 (33)	wax currant
RIIN2	Ribes inerme	1 (50)	— —	7 (60)	20 (33)	6 (20)	— —	— —	— —	whitestem currant
ROWO	Rosa woodsii	11 (75)	16 (67)	4(100)	18 (67)	5 (60)	T (25)	16 (50)	13 (67)	Woods rose
SYRO	Symphoricarpos rotundifolia	20(100)	14 (89)	4(100)	19(100)	22 (60)	8(100)	2(100)	3 (67)	mountain snowberry
GRAMINOIDS										
BRCA10	Bromopsis canadensis	3 (50)	13 (56)	1 (40)	— —	3 (40)	— —	2(100)	— —	fringed brome
BRIN7	Bromopsis inermis	— —	— —	— —	33 (7)	— —	— —	— —	— —	smooth brome
CAGE2	Carex geyeri	31 (50)	62(100)	21 (80)	16 (67)	34(100)	— —	76(100)	38(100)	elk sedge
ELEL5	Elymus elymoides	2(100)	5 (11)	— —	— —	1 (60)	2 (25)	— —	5 (33)	bottlebrush squirreltail
ELGL	Elymus glaucus	— —	30 (11)	1 (20)	— —	— —	— —	— —	— —	blue wildrye
FETH	Festuca thurberi	T (25)	24(100)	1 (20)	1 (33)	3 (40)	— —	T(100)	— —	Thurber fescue
KOMA	Koeleria macrantha	4 (75)	— —	— —	6 (33)	1 (40)	3 (50)	— —	1 (33)	prairie junegrass
POFE	Poa fendleriana	13(100)	3 (22)	8 (40)	34 (33)	6 (40)	16 (50)	4 (50)	— —	muttongrass
POPR	Poa pratensis	— —	40 (44)	6 (40)	85 (67)	— —	— —	— —	— —	Kentucky bluegrass
POSE	Poa secunda	— —	— —	— —	— —	— —	11 (25)	— —	— —	Sandberg bluegrass
FORBS										
ACLA5	Achillea lanulosa	1 (50)	19 (78)	T (20)	10 (67)	2 (40)	— —	1 (50)	— —	western yarrow
ACRU2	Actaea rubra	— —	— —	12 (20)	— —	— —	— —	— —	— —	red baneberry
ARCO9	Arnica cordifolia	— —	20 (33)	25 (40)	— —	27 (60)	— —	— —	1 (33)	heartleaf amica
ASSP16	Aster spathulatus	17 (25)	— —	6 (20)	— —	— —	— —	— —	— —	western aster
ASTRA	Astragalus	— —	30 (11)	— —	— —	— —	— —	— —	— —	milkvetch
GASE6	Galium septentrionale	7 (50)	7 (33)	T (80)	17(100)	2 (40)	— —	— —	— —	northern bedstraw
LAL2	Lathyrus leucanthus	1 (50)	40 (22)	18 (60)	— —	2 (40)	— —	10 (50)	— —	aspen peavine
LUAR3	Lupinus argenteus	— —	14 (56)	3 (40)	27 (33)	8 (40)	— —	3(100)	1 (33)	silvery lupine
TAOF	Taraxacum officinale	T (50)	34 (44)	2 (40)	35 (67)	— —	— —	T (50)	— —	common dandelion
THFE	Thalictrum fendleri	12 (25)	27 (33)	1 (20)	— —	1 (20)	— —	— —	— —	Fendler meadow-rue
VIAM	Vicia americana	2 (50)	40 (22)	1 (20)	30 (33)	3 (40)	— —	— —	— —	American vetch
GROUND COVER										
BARESO	bare soil	8 (75)	— —	4 (60)	5 (33)	9 (60)	2(100)	T (50)	— —	
LITTER	litter and duff	89(100)	— —	80 (80)	91 (33)	62 (60)	87(100)	96 (50)	— —	
GRAVEL	gravel 0.2-10 cm	2	—	2	1	1	3	—	—	
COBBLE	cobble 10-25 cm	2 (75)	— —	5 (80)	2 (33)	— —	3(100)	— —	— —	
STONES	stone > 25 cm	— —	— —	13 (40)	— —	— —	3 (50)	3 (50)	— —	
MOSSON	moss on soil	5 (50)	— —	14 (60)	1 (33)	2 (20)	7(100)	T (50)	— —	
LICHENS	lichens on soil	1	—	3	—	3	4	—	—	

Douglas-fir/pachistima–Dark Frigid soils–
Northerly backslopes, 7,900-10,000 ft

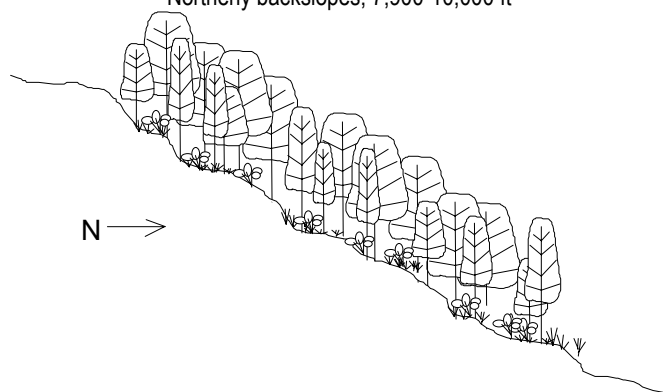


Figure 04-3. Cross-section of vegetation structure of *Douglas-fir/pachistima–Dark soils–Northerly*. Aspects are northerly, and slope angles average 12%.

Douglas-fir/pachistima–Dark soils–Northerly is a moderately common type on gentle to steep northerly slopes, in areas with dark soils outside the deep rainshadows. It is characterized by Douglas-fir (PSME), pachistima (PAMY), aspen (POTR5), common juniper (JUCO6), elk sedge (CAGE2), and the absence of serviceberry. Many stands have lodgepole pine (PICO) as well; see Table 04-14 for common species names and codes.

This type is typically a tall, dense layer of trees of mixed species, usually including two or more tree layers of Douglas-fir, aspen, or lodgepole pine. Tall and medium shrubs are sparse, except for common juniper. The short shrub layer is well-developed, with pachistima, Oregon-grape (MARE11), and kinnikinnick (ARUV) represented; some stands also include dwarf bilberry (VACE). Serviceberry and bitterbrush are each <0.1% cover, and buffaloberry may be absent or present with

cover as much as 10%. Thurber fescue is absent or <2% cover. Arizona fescue (FEAR2), twinflower (LIBO3), and Kentucky bluegrass (POPR) are never present.

This type is related to *Douglas-fir/serviceberry–Steep northerly*, which occurs at slightly lower elevations on slightly steeper slopes and includes serviceberry. It is also related to *Douglas-fir/elk sedge–Cold to moderately cold–Gentle to steep*, which is similar in many respects but lacks pachistima.

Douglas-fir/pachistima–Dark soils–Northerly falls at the lower end of a sequence of types shown in Table 04-12. It is similar to the other two types in this table, but occurs at lower elevations and lacks subalpine fir (ABB12). The plant association *Pseudotsuga menziesii/Paxistima myrsinites* was described by Hess (1982).

Table 04-12. Three ecological types named for pachistima.

Ecological Type		Elevation, ft	% Surface Coarse % Bare Surface
Code	Name	Average Aspect, °M (r) % Slope	
FD09	Douglas-fir/pachistima–Dark Frigid soils–Northerly backslopes, 7,900-10,000 ft	9,391 (7,960-9,920) 320 (0.70) 32 (13-52)	4 (0-80) 1 (0-15)
FL01	Subalpine fir–Douglas-fir/ pachistima–Thin-dark Cryoboralfs and Cryoborolls– Moderately steep slopes, 9,300-10,300 ft	9,824 (9,320-10,235) 251 (0.36) 22 (16-38)	2 (0-7) 0 (0-0)
FL03	Subalpine fir–Engelmann spruce/pachistima–Cryoboralfs– Slopes, 9,800-10,900 ft	10,312 (9,840-10,860) 352 (0.30) 25 (3-40)	6 (0-10) 0 (0-2)

Ponderosa pine communities adjoin this type on gentle benches where deeper soil occurs. Tall willow (yellow, serviceberry) communities border this type in poorly drained bottoms. Blue spruce-cottonwood riparian communities occur adjacent to sites in higher-gradient stream courses, while big sagebrush/Arizona fescue communities border on sunny non-northerly benches with shallow, rocky soils. Serviceberry stands are found on adjacent steep, easterly slopes.

Aspen is the usual seral tree in this ecological type. Most stands include aspen along with sparse lodgepole pine. Community Types C and D are permanent *disclimaxes*, in which Douglas-fir seed sources were effectively eliminated by persistent and intense fires centuries ago, and lodgepole pine

now dominates. Community Types E and F are similar *disclimaxes* in which aspen now dominates. This ecological type falls into Fire Group 9, the cool or moist Douglas-fir habitat types (Crane 1982).

Moderately heavy to heavy grazing by cattle, sheep, deer, or elk decreases elk sedge and other graminoids. Most sites are not suitable for livestock grazing, except along the edges of stands, because of deep shade and lack of nutritious forage.

The amount of horizontal obstruction varies from low to high, depending on the community type. Deer and elk use these stands extensively in the summer and spring/fall. There is too much snow in and around these stands for big game to use them in the winter. See Table 04-13.

Summary of Ecological Type Characteristics

1. Explanation of symbols is found in Appendix C. Percentages in [brackets] indicate the percentage of plots sampled that have that characteristic.

NUMBER OF SAMPLES	34, soil descriptions from 7 of these (total 34)
ELEVATION	9,391 ft (7,960-9,920 ft) = 2,862 m (2,426-3,023 m)
AVERAGE ASPECT	320°M (r = 0.70)
LITHOLOGY	Mostly igneous: gneiss-granite-tuff-schist [82%], some sedimentary sandstone & siltstone
FORMATIONS ¹	Xfh-Xg [63%], some Taf, Tos, and KJdj
LANDFORMS	Soil creep slopes
SLOPE POSITIONS	Backslopes and upper backslopes
SLOPE SHAPES	x horizontally, y vertically
SLOPE ANGLE	31.8% (13-52%)
SOIL PARENT MATERIAL	Predominantly colluvium [86%]
COARSE FRAGMENTS	3.9% (0-80%) cover on surface, 46.8% (13-75%) by volume in soil
SOIL DEPTH	70 cm (46-104 cm) = 27.6 in (18-41 in)
MOLLIC THICKNESS	15 cm (5-33 cm) = 5.7 in (2-13 in)
TEXTURE	Surface is loamy (loam-sandy loam-sandy clay loam); subsurface is a variety, with mostly sandy (sandy clay loam-sandy clay-sand-sandy loam-loamy sand)
SOIL CLASSIFICATION	Eutroboralfs [29%], Argiborolls [43%], or Cryochrepts [29%]
TOTAL LIVE COVER	227.0% (107.0-412.5%)
NUMBER OF SPECIES	17.9 (8-29)
TOTAL LIVE COVER/NO. SPECIES	13.7% (4.7-24.3%)
CLIMATE	Cool, moderately dry. Usually outside rainshadow, but a few plots in partial rainshadow.
WATER	Cover of litter and duff keeps soil moisture through the season on most sites. Usually no permanent water in or near sites.

Table 04-13. Wildlife values (relative to the whole UGB) for the principal wildlife species using Douglas-fir/pachistima–Dark soils–Northerly. “ ” means the same as above.		
CT	Mule Deer	Elk
	Season–Preference	Season–Preference
A, B, E	Winter, Mild: Low	Winter, Mild: Low
	Winter, Severe: Very Low	Winter, Severe: Very Low
	Spring/Fall: Moderately High (Cover, Forage, Overnight)	Spring/Fall: Moderate (Cover, Forage, Overnight)
C, D	Winter, Mild: Low	
	Winter, Severe: Very Low	
	Spring/Fall: Moderate (Cover, Forage, Overnight)	
F	Winter, Mild: Low	
	Winter, Severe: Very Low	
	Spring/Fall: Low to Mod. Low (Cover, Forage, Overnight)	

Key to Community Types

1. Douglas-fir dominant, >60% cover. Aspen absent or <2% cover. Lodgepole pine absent.....**B**
1. Douglas-fir 0-75% cover, usually <60%. Absent sometimes dominant. Lodgepole pine often present or dominant (2).....(3)
2. Lodgepole pine >25%, dominant over Douglas-fir and/or aspen. Douglas-fir or aspen sometimes absent(3)
2. Lodgepole pine absent or <10% cover.....(4)
3. Dwarf bilberry (VACE) conspicuous as a short shrub, >15% cover**C**
3. Dwarf bilberry absent**D**
4. Douglas-fir dominant over (greater cover than) aspen. Both Douglas-fir and aspen always present, Douglas-fir >35% cover, aspen >10% cover. Rose 0-30% cover, sometimes absent**A**
4. Aspen dominant over (greater cover than) Douglas-fir. Aspen >50% cover, always present, but Douglas-fir sometimes absent. Rose always present, 10-30% cover(5)
5. Douglas-fir >30% cover**E**
6. Douglas-fir absent or <10% cover**F**

Description of Community Types

- A** *Douglas-fir-aspen-common juniper-pachistima-elk sedge* has Douglas-fir >35% cover, dominant over aspen, which is always present and >10% cover. One plot had dwarf bilberry 10% and a little bit of lodgepole pine (5%).
- B** *Douglas-fir-common juniper-pachistima-Oregon-grape* has Douglas-fir dominant essentially alone, sometimes there is a little bit (<2% cover) of aspen.
- C** *Lodgepole pine-dwarf bilberry* has lodgepole pine dominant over Douglas-fir or aspen (sometimes one of these is absent), with conspicuous dwarf bilberry in the short shrub layer, >10% cover. Heartleaf arnica (ARCO9) may be prominent (>10% cover).
- D** *Lodgepole pine-aspen-common juniper-pachistima-elk sedge-arnica* has lodgepole pine dominant over Douglas-fir or aspen (sometimes one of these is absent). Dwarf bilberry is absent, and heartleaf arnica may be prominent (>10% cover).
- E** *Aspen-Douglas-fir-common juniper-pachistima-rose-elk sedge* has aspen >50% cover and mixed with almost as much Douglas-fir (>35% cover). Rose is >15% cover.
- F** *Aspen-pachistima-rose-elk sedge-brome-lupine* has aspen >55% cover, but Douglas-fir is absent or in any case <10% cover. Rose is >10% cover.



An example of Douglas-fir/pachistima (Community Type B), in partial rainshadow . Douglas-fir 53% cover, pachistima 9%. Coarse Fragments Cover = 22%, Total Live Cover = 90%, Coarse Fragments in Soil = 38. Soil sampled as a Typic Eutroboralf, Loamy-Skeletal, Mixed. Gateview Quadrangle, elevation 8,720 ft, 46° 35'1" (NNW) slope. August 24, 1993.

Table 04-14. Community types within <i>Douglas-fir/pachistima</i> – <i>Dark soils</i> – <i>Northerly</i> .										
CT	No. Samples	Elevation, ft Slope, %	Coarse, % Depth, cm Mollic Depth, cm	Surface Coarse, % Bare, % Seral Stage	Layer Height, m		Avg Lyr Cvr %	Cover, %: Trees Shrubs Graminoids Forbs	No. Species Total Live Cover, % TLC/NS, %	Obstruction %: 1.5-2.0 m 1.0-1.5 m 0.5-1.0 m 0.0-0.5 m Total<2m
A. Douglas-fir-aspen- common juniper- pachistima-elk sedge	6	9,460 (8,650-9,640) 30.0 (30-30)	* * *	* * LS	*			77 (50-120) 65 (30-122) 56 (35-110) 16 (0-31)	14 (11-18) 214 (144-313) 16.3 (10.3-24.1)	*
B. Douglas-fir- common juniper- pachistima-Oregon- grape	5	9,244 (8,720-9,520) 39.4 (31-50)	67 (62-75) 59 (47-70) 14 (8-18)	8 (0-22) 1 (0-1) LS	T1 T2 T3 T4 S1 S2 GF M L	22 16 5 2 0.6 (0.4-0.7) 0.1 (0.0-0.1) 0.3 (0.0-0.4) 0.0 0.0	25.4 59.5 10.1 T 1.3 28.5 75.8 8.3 3.9	76 (56-89) 37 (13-66) 41 (4-81) 23 (2-67)	23 (16-29) 177 (126-270) 8.6 (4.7-16.9)	58 (35-80) 63 (25-100) 73 (50-95) 73 (50-95) 66 (40-93)
C. Lodgepole pine- dwarf bilberry	9	* *	* * *	40 * MS	*			73 (37-120) 75 (35-135) 20 (1-61) 22 (1-71)	14 (8-19) 190 (107-308) 13.3 (7.5-19.3)	*
D. Lodgepole pine- aspen-common juniper-pachistima-elk sedge-arnica	5	9,320 (9,000-9,640) 21.5 (13-30)	32 (27-36) 77 (61-92) 20 (7-33)	0 (0-40) 3 (0-5) MS	*			83 (58-96) 48 (10-110) 44 (25-75) 42 (5-102)	21 (17-26) 217 (154-306) 10.9 (5.9-17.1)	38 (25-50) 30 (25-35) 30 (25-35) 58 (45-70) 39 (30-48)
E. Aspen-Douglas-fir- common juniper- pachistima-rose-elk sedge	3	9,260 (9,210-9,310) 41.4 (31-52)	49 (33-66) 82 (60-104) 16 (9-22)	1 (1-1) 0 (0-1) LM	T1 T2 T3 T4 S1 S2 GF M L	20 * Missing Missing 0.6 (0.3-1.5) 0.1 (0.0-0.3) 0.5 (0.0-0.9) 0.0 Missing	80 26 M M 25 32 82 12 M	103 (86-119) 53 (39-70) 55 (26-72) 60 (30-76)	23 (15-29) 271 (198-319) 12.9 (7.9-19.8)	68 (60-75) 70 (65-75) 73 (70-75) 70 (70-70) 70 (66-74)
F. Aspen-pachistima- rose-elk sedge-brome- lupine	6	9,890 (9,880-9,900) 15.5 (15-16)	28 (13-44) 68 (46-89) 9 (5-12)	12 * EM	T1 T2 T3 T4 S1 S2 GF M L	21 Missing 5 0.6 0.8 (0.3-0.9) 0.2 (0.0-0.3) 0.3 (0.0-0.6) Missing Missing	68 M 34 T 12 65 52 M M	77 (60-82) 80 (47-115) 89 (45-111) 79 (16-125)	19 (15-27) 325 (223-413) 18.7 (8.2-24.3)	0 0 0 20 5

*. Unknown: measurements were not taken in this CT.

Table 04-15. Resource Values for <i>Douglas-fir/pachistima</i> -Dark soils-Northerly.						
Resource values were calculated from the numbers in Table 04-14, relative to the whole UGB.						
The numbers in this table can be translated: 0 = Very Low, 1 = Low, 2 = Moderately Low, 3 = Moderate, 4 = Moderately High, 5 = High, and 6 = Very High.						
	Community Type					
Resource Value	A	B	C	D	E	F
Potential Cattle Forage Production	2-4	2-4	1-2	2	2-3	3-4
Grazing Suitability	2	1-2	1-2	1-2	1-2	3
Potential Timber Production	3-4 - Mix	3-4 - Mix	3-4 - PICO	3-4 - PICO	4-5 - POTR5	4-5 - POTR5
Timber Suitability	2	2	2	2-3	1-2	3-4
Developed Recreation	2-3	2-3	2	2	3	3
Dispersed Recreation	3	3	2-3	2-3	4	4
Scenic	3	3	2	2	4	4
Road & Trail Stability	3	3	3	3-4	2-3	4
Construction Suitability	3	3	3	3	2	3
Deer & Elk Hiding Cover	4-6	4-6	3-4	3-4	5-6	0-1
Deer & Elk Forage & Browse	2	2	1-2	1-2	3-4	3-4
Need for Watershed Protection	2	2	1	1	2	2
Soil Stability	3	3	3	3	2	3
Risk of Soil Loss-Natural	1	1	1	1	2	2
Risk of Soil Loss-Management	2	2	1	1	3	3-4
Risk of Permanent Depletion-Range	1-2	1-2	1	1	3	3
Risk of Permanent Depletion-Wildlife	3	3	2	2	3	3
Risk of Permanent Depletion-Timber	2	2	2	2	2	2
Resource Cost of Management	3	3	2	2	3	3
Cost of Rehabilitation	2	2	1	1	2	2



A Douglas-fir/pachistima stand in late seral stage (Community Type B), dominated by Douglas-fir (80% cover), with a trace of lodgepole pine and no aspen. Elk sedge 75% cover, pachistima 8%, Oregon-grape 7%. Soil sampled as a Mollic Eutroboralf, Loamy-Skeletal, Mixed. Pitkin Quadrangle, elevation 9,500 ft, 31° 005' (N) slope. August 17, 1994.



Another Douglas-fir/pachistima stand (Community Type E), dominated by aspen 69% cover and Douglas-fir 50%; no lodgepole pine. Good cover by species associated with aspen, such as peavine, fleabane, and snowberry, but mixed with these are the Douglas-fir associates pachistima, rose, common juniper, and elk sedge. Soil sampled as a Typic Haploboroll, Loamy-Skeletal, Mixed. Signal Peak Quadrangle, elevation 9,310 ft, 52° 313' (WNW) slope. July 15, 1994.

Table 04-16. Common Species in *Douglas-fir/pachistima*-Dark soils-Northerly, where Characteristic cover > 10% or Constancy > 20%. "-" means that the species is not found. Dead cover is not listed. Ccv = Characteristic Cover, Con = Constancy. If Avc = Average Cover, then these are related using the formula $Avc = Ccv \cdot 100\% / Con$.

		C O M M U N I T Y T Y P E						
		A	B	C	D	E	F	
Code	Species	Ccv(Con) N = 6	Ccv(Con) 5	Ccv(Con) 9	Ccv(Con) 5	Ccv(Con) 3	Ccv(Con) 6	Common Name
TREES								
PICO	Pinus contorta	5 (17)	T (20)	44(100)	48(100)	4 (67)	6 (33)	lodgepole pine
POTR5	Populus tremuloides	21(100)	1 (60)	29 (67)	16(100)	59(100)	73(100)	quaking aspen
PSME	Pseudotsuga menziesii	55(100)	75(100)	12 (78)	20 (80)	41(100)	3 (33)	Douglas-fir
SHRUBS								
ARUV	Arctostaphylos uva-ursi	13 (33)	T (20)	17 (89)	9(100)	1 (33)	17 (83)	kinnikinnick
JUCO6	Juniperus communis	18(100)	9(100)	14 (89)	14(100)	11(100)	14 (67)	common juniper
MARE11	Mahonia repens	12 (83)	7(100)	6 (44)	3 (40)	13 (67)	21 (83)	Oregon-grape
PAMY	Paxistima myrsinites	17(100)	9(100)	13 (89)	14(100)	13(100)	19(100)	mountain-lover
ROWO	Rosa woodsii	15 (33)	8 (80)	5 (11)	11 (60)	17(100)	19(100)	Woods rose
SHCA	Shepherdia canadensis	5 (17)	1 (40)	5 (33)	4 (40)	2 (33)	– –	russet buffaloberry
SYRO	Symphoricarpos rotundifolius	4 (83)	6 (80)	– –	– –	4 (33)	2 (50)	mountain snowberry
VACE	Vaccinium cespitosum	6 (33)	– –	31(100)	– –	– –	– –	dwarf bilberry
GRAMINOIDS								
BRCA10	Bromopsis canadensis	15 (33)	1 (20)	8 (22)	3 (40)	4(100)	14(100)	fringed brome
CAGE2	Carex geyeri	50(100)	49 (80)	19 (89)	43(100)	51(100)	66(100)	elk sedge
FORBS								
ACLA5	Achillea lanulosa	– –	– –	– –	10 (40)	1 (67)	10 (83)	western yarrow
ARCO9	Arnica cordifolia	23 (50)	20 (40)	10 (67)	12(100)	20 (33)	– –	heartleaf arnica
ERCO24	Eremogone congesta	20 (17)	– –	– –	– –	– –	– –	desert sandwort
EREX4	Erigeron eximius	– –	– –	– –	– –	29 (33)	– –	forest fleabane
ERSP4	Erigeron speciosus	– –	– –	– –	– –	40 (33)	– –	Oregon fleabane
FRV1	Fragaria virginiana	– –	25 (20)	12 (33)	4(100)	– –	43 (67)	Virginia strawberry
GER1	Geranium richardsonii	– –	– –	– –	– –	3 (33)	25 (33)	Richardson geranium
LALE2	Lathyrus leucanthus	– –	18 (20)	– –	12 (20)	31 (67)	19 (33)	aspen peavine
LUAR3	Lupinus argenteus	1 (33)	T (20)	24 (44)	9 (60)	6(100)	19(100)	silvery lupine
SOMI2	Solidago missouriensis	– –	– –	– –	10 (40)	– –	– –	Missouri goldenrod
GROUND COVER								
BARESO	bare soil	– –	1 (40)	– –	3 (40)	T (67)	– –	
LITTER	litter and duff	– –	91 (80)	– –	96 (40)	99 (67)	93 (33)	
GRAVEL	gravel 0.2-10 cm	–	1	–	T	–	–	
COBBLE	cobble 10-25 cm	– –	2 (40)	– –	– –	1 (33)	1 (17)	
STONES	stone > 25 cm	– –	10 (40)	– –	– –	1 (33)	12 (17)	
MOSSON	moss on soil	– –	8 (40)	– –	– –	12 (33)	– –	
LICHENS	lichens on soil	–	3	–	3	1	–	

DOUGLAS-FIR/BITTERBRUSH–GENTLE SLOPES

Douglas-fir/bitterbrush–Thin-dark Frigid soils–
Gentle slopes, 7,900-10,300 ft

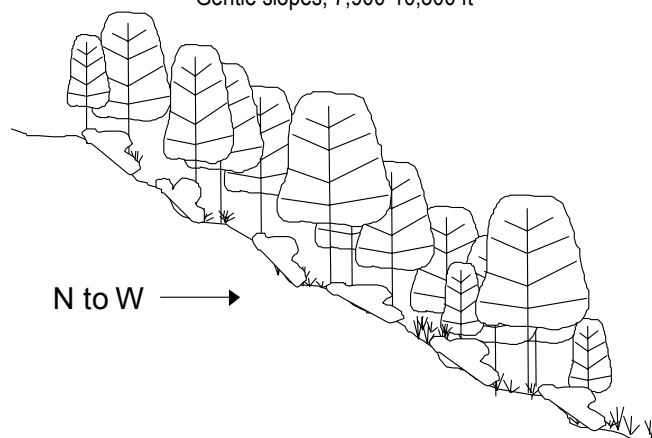


Figure 04-4. Cross-section of vegetation structure of *Douglas-fir/bitterbrush–Gentle slopes*. Aspects are non-northerly, and slope angles average 12%.

Douglas-fir/bitterbrush–Gentle slopes is a common type on gentle slopes within partial rainshadows. Found on dry Montane slopes in the UGB, this type is apparently known only from here. Soils tend to have a thin Mollic horizon, hence the “thin-dark” in the name. Douglas-fir (PSME) and bitterbrush (PUTR2) are the main types of vegetation in this type. Many stands also support big sagebrush (ARTR2), muttongrass (POFE), ponderosa pine (PIPO), or lodgepole pine (PICO) as well. See Table 04-20 for common species names and codes.

This type is typically a sparse to moderately dense canopy of Douglas-fir, often mixed with aspen, ponderosa pine, or lodgepole pine, and a conspicuous understory layer of medium shrubs, typically a mixture of bitterbrush and big sagebrush. Spruce (PIPU, PIEN), twinflower (LIBO3), and whortleberry (VAMYO) are all absent, and buffaloberry (SHCA) and Thurber fescue (FETH) are each <1% cover.

This type is related to *Ponderosa pine/bitterbrush–Dark soils with no clay layer*, which is found on southerly slopes and lacks Douglas-fir. The plant association *Pseudotsuga menziesii/Purshia tridentata* (Johnston 1987) is based on plots sampled in the Gunnison Basin by

Komarkova (1987). The *Pseudotsuga menziesii/Purshia tridentata* phase *Pinus ponderosa-Festuca arizonica* is described as new here. Adjacent types include Ponderosa pine/bitterbrush stands on southerly slopes with better-drained soils, and tall willow (yellow, blue, serviceberry) riparian areas in bottoms. Big sagebrush-bitterbrush communities adjoin this type in parks and openings and on ridgetops.

This type falls into Fire Group 9, cool or moist Douglas-fir habitat types (Crane 1982).

Moderately heavy to heavy grazing by cattle, sheep, deer, or elk decreases bitterbrush cover and palatable grasses such as Arizona fescue and mountain muhly. Big sagebrush and rabbitbrush increase under grazing pressure.

Horizontal obstruction varies from very low to high, but averages only moderate. Elk, and especially deer, use these stands for browse and forage, and to a lesser extent for cover. Bitterbrush is highly palatable to deer, and many of these stands have experienced significant decreases in bitterbrush in the past due to deer browsing. Most stands would be suitable for deer and elk winter range, but there is too much snow for the animals to access them except in mild winters. See Table 04-17 for elk and deer use by community type.

Table 04-17. Wildlife values (relative to the whole UGB) for the principal wildlife species using <i>Douglas-fir/bitterbrush–Gentle slopes</i> .		
CT	Mule Deer	Elk
	Season–Preference	Season–Preference
A, B, C, D, E, F	Winter, Mild: Moderate (Browse, Forage, Cover) Winter, Severe: Very Low Spring/Fall: Moderately High (Browse, Forage, Overnight)	Winter, Mild: Moderate (Browse, Forage, Cover) Winter, Severe: Very Low Spring/Fall: Moderate (Browse, Forage, Overnight)
G, H, J	Winter, Mild: Moderately Low (Browse, Forage, Cover) Winter, Severe: Very Low Spring/Fall: Moderate (Browse, Forage, Overnight)	Winter, Mild: Mod. Low (Browse, Forage, Cover) Winter, Severe: Very Low Spring/Fall: Moderate (Browse, Forage, Overnight)

Summary of Ecological Type Characteristics

1. Explanation of symbols is found in Appendix C. Percentages in [brackets] indicate the percentage of plots sampled that have that characteristic.

NUMBER OF SAMPLES	41, soil descriptions from 5 of these (total 41)
ELEVATION	9,097 ft (7,960-10,260 ft) = 2,773 m (2,426-3,127 m)
AVERAGE ASPECT	220°M (r = 0.38)
LITHOLOGY	A wide variety
FORMATIONS ¹	A variety
LANDFORMS	Ridges and mesas [60%], soil creep slopes [40%]
SLOPE POSITIONS	Backslopes, shoulders, summits
SLOPE SHAPES	Convex to undulating horizontally, Convex to linear vertically
SLOPE ANGLE	27.0% (3-100%)
SOIL PARENT MATERIAL	Primarily colluvium [80%]
COARSE FRAGMENTS	14.0% (0-80%) cover on surface, 58.4% (24-84%) by volume in soil
SOIL DEPTH	65 cm (40-152 cm) = 25.6 in (16-60 in)
MOLLIC THICKNESS	10 cm (0-30 cm) = 3.8 in (0-12 in)
TEXTURE	A wide variety of textures on the surface and in subsurface
SOIL CLASSIFICATION	Eutroboralfs [40%], Lithic Haploborolls, Haplochrept, Argiboroll
TOTAL LIVE COVER	145.0% (67.2-319.5%)
NUMBER OF SPECIES	21.7 (12-38)
TOTAL LIVE COVER/NO. SPECIES	7.3% (1.8-17.8%)
CLIMATE	In moderate rainshadow. Cool, moderately dry, moderately exposed to sun, slightly exposed to wind.
WATER	Litter and duff holds moisture in soil through most of season, unless the site has been depleted and bare soil is evident over about 10% cover.

Key to Community Types

1. Parry oatgrass (DAPA2) present and >1% cover **A**
1. Parry oatgrass absent or <1% cover (2)
2. Bitterbrush >20% cover. Ponderosa pine >10% cover (3)
2. Bitterbrush <20% cover. Ponderosa pine absent to 25% cover, often <10% (4)
3. Four trees: ponderosa, lodgepole, aspen, Douglas-fir. Ponderosa pine >10% cover, aspen >25%. Bottlebrush squirreltail (ELEL5) >20% **B**
3. Two trees: lodgepole pine and aspen both absent. Ponderosa pine >5% cover, Douglas-fir >20%. Bottlebrush squirreltail absent to <20% cover **C**
4. Elk sedge >20% cover (5)
4. Elk sedge <20% cover (8)
5. Douglas-fir >25% cover, dominant over other trees (6)
5. Either Douglas-fir <25% cover or other trees dominant (7)
6. Bitterbrush >5% cover **D**
6. Bitterbrush absent or <5% cover **H**
7. Dominated by lodgepole pine. Sagebrush 0-20% cover **F**
7. Mixed stands of aspen-ponderosa-Douglas-fir, no one of these >15% cover. Lodgepole pine absent. Sagebrush 5-20% cover **J**
8. Mixed stands of aspen-ponderosa-Douglas-fir, no one of these >15% cover. Lodgepole pine absent **J**
8. Either lodgepole pine or ponderosa pine >20% cover (9)
9. Ponderosa pine dominant, >15% cover **E**
9. Lodgepole pine dominant, >25% cover **G**

Description of Community Types

- A** *Douglas-fir-ponderosa pine-sagebrush-bitterbrush-common juniper* has Douglas-fir dominant over ponderosa pine, though both are present. Aspen and lodgepole pine are usually absent. Bitterbrush cover is >20%, Parry oatgrass cover is >1%, sometimes >15%, Elk sedge cover is >50%.
 - B** *Aspen-ponderosa pine-lodgepole pine-Douglas-fir-bitterbrush-common juniper-elk sedge* is a mixed-species forest, with lodgepole pine, aspen, ponderosa pine, and Douglas-fir. Bitterbrush cover is >25%, and elk sedge cover is >60%. Oatgrass is absent.
 - C** *Ponderosa pine-Douglas-fir-bitterbrush-sagebrush* has Douglas-fir dominant over ponderosa pine, though both are present. Aspen and lodgepole pine are usually absent. Bitterbrush cover is >20%. Elk sedge cover is >10%, but oatgrass is absent.
 - D** *Douglas-fir-ponderosa pine-common juniper-bitterbrush-sagebrush-elk sedge* Douglas-fir cover is >25%, and it is dominant over other trees. Lodgepole pine is absent to minor, <5% cover. Bitterbrush cover is 5-10%, and elk sedge cover is >10%.
 - E** *Ponderosa pine-Douglas-fir-bitterbrush* Ponderosa pine is dominant over Douglas-fir, though both are present. Aspen is absent or <1% cover. Lodgepole pine is absent. Bitterbrush cover is 5-20%. Elk sedge cover is absent to 10%.
 - F** *Lodgepole pine-Douglas-fir-sagebrush-elk sedge-bluegrass* has lodgepole pine dominant over other tree species. Bitterbrush cover is 10-30%.
 - G** *Lodgepole pine-bitterbrush-kinnikinnick-common juniper-sparse* is dominated by lodgepole pine (>25% cover). Bitterbrush cover is 5-30%.
 - H** *Sagebrush-sparse conifers-muttongrass* is dominated by Douglas-fir, but the stand is really dominated by sagebrush and elk sedge. Bitterbrush is absent to 1% cover.
 - J** *Sparse Douglas-fir-sagebrush-bitterbrush-muttongrass* has few trees, with no tree species cover >15%. Sagebrush cover is 5-20%, and bitterbrush cover is 5-20%.
-



A typical stand of Douglas-fir/bitterbrush on a broad, northerly bench (Community Type E). This looks a lot like ponderosa pine/bitterbrush, but Douglas-fir is regenerating. Ponderosa pine 49% cover, Douglas-fir 6%, bitterbrush 2%, sagebrush 10%, Arizona fescue 24%, muttongrass 7%. Soil sampled as a Lithic Haploboroll, Sandy-Skeletal, Mixed. Gateview Quadrangle, elevation 8,890 ft, 3% 078 (ENE) slope.

Table 04-18. Community types within *Douglas-fir/bitterbrush-Gentle slopes*.

CT	No. Samples	Elevation, ft Slope, %	Coarse, % Depth, cm Mollic Depth, cm	Surface Coarse, % Bare, % Seral Stage	Layer Height, m	Avg Lyr Cvr %	Cover, %: Trees Shrubs Gramin. Forbs	No. Species Total Live Cover, % TLC/NS, %	Obstruction %: 1.5-2.0 m 1.0-1.5 m 0.5-1.0 m 0.0-0.5 m Total<2m
A. Douglas-fir-ponderosa pine-sagebrush-bitterbrush-common juniper	3	*	*	*	*		43 (32-50) 60 (45-81) 89 (65-135) 41 (8-61)	19 (18-20) 233 (212-274) 12.3 (10.6-15.2)	*
B. Aspen-ponderosa pine-lodgepole pine-Douglas-fir-bitterbrush-common juniper-elk sedge	2	*	*	*	*		79 (67-91) 49 (47-51) 140 (130-150) 34 (32-35)	20 (18-22) 301 (283-320) 15.3 (12.8-17.8)	*
C. Ponderosa pine-Douglas-fir-bitterbrush-sagebrush	4	9,440 *	*	*	*		56 (22-100) 55 (35-74) 43 (22-66) 8 (2-20)	21 (13-28) 161 (132-197) 8.2 (6.4-10.1)	*
D. Douglas-fir-ponderosa pine-common juniper-bitterbrush-sagebrush-elk sedge	4	*	*	*	*		62 (28-91) 45 (22-75) 59 (35-75) 8 (2-16)	19 (17-23) 174 (112-257) 9.3 (5.9-15.1)	*
E. Ponderosa pine-Douglas-fir-bitterbrush	6	8,870 (8,290-9,280) 14.8 (3-32)	63 (49-77) 42 (40-43) 20 (9-30)	10 (3-23) 3 (1-8) EM	T1 19 (17-21) T2 16 (10-19) T3 2.2 (0.2-8) S1 Missing S2 0.43 (0.2-1.0) T4 Missing S3 0.1 (0.0-0.3) GF 0.2 (0.0-1.1) M 0.0 L 0.0	4.6 32.7 2.0 M 11.0 M 0.8 34.6 0.9 1.2	38 (21-70) 41 (11-85) 28 (16-35) 12 (1-55)	27 (18-38) 118 (67-167) 4.8 (1.8-8.8)	25 5 15 75 30
F. Lodgepole pine-Douglas-fir-sagebrush-elk sedge-bluegrass	7	9,600 (8,830-10,260) 28.6 (10-54)	81 (78-84) 48 (46-49) 3 (2-4)	24 (20-27) 3 (2-4) EM	T1 22 T2 15 T3 2.5 (1.0-5.0) S1 1.4 (1.0-2.5) S2 0.3 (0.1-0.6) T4 0.2 (0.0-1.0) S3 0.1 (0.0-0.2) GF 0.2 (0.0-1.1) M 0.0 L 0.0	27 56 4 4 17 T 1 39 T 2	49 (22-93) 30 (13-55) 43 (25-65) 16 (2-52)	23 (14-35) 138 (83-203) 6.6 (2.8-14.5)	57 48 50 63 54
G. Lodgepole pine-bitterbrush-kinnikinnick-common juniper-sparse	5	9,600 (9,320-9,880) 27.7 (21-36)	48 (36-61) 64 (43-88) 2 (0-3)	11 (2-27) 10 (2-18) EM	T1 Missing T2 18 T3 * S1 * S2 * T4 * S3 Missing GF * M 0.0 L 0.0	M 71 8 10 26 9 M T 3 8	59 (42-77) 36 (28-52) 8 (0-13) 2 (0-7)	24 (16-34) 105 (83-134) 4.8 (2.4-6.0)	18 (15-20) 13 (5-20) 18 (10-25) 25 (15-35) 18 (13-24)
H. Sagebrush-sparse conifers-muttongrass	4	8,045 (8,040-8,050) 60.0 (20-100)	*	*	*		48 (21-65) 28 (22-36) 38 (11-70) 9 (2-21)	16 (12-18) 122 (68-192) 7.7 (4.0-11.3)	*
J. Sparse Douglas-fir-sagebrush-bitterbrush-muttongrass	6	8,920 (8,500-9,340) 15.2 (10-20)	24 (24-24) 152 (152-152) 26 (26-26)	38 (30-46) 0 (0-0) EM	*		25 (16-33) 31 (16-47) 29 (17-42) 18 (2-72)	21 (17-32) 103 (86-140) 5.2 (2.7-7.4)	0 15 35 65 29

*. Unknown: measurements were not taken in this CT.

Table 04-19. Resource Values for *Douglas-fir/bitterbrush--Gentle slopes*. Resource values were calculated from the numbers in Table 04-18, relative to the whole UGB.

The numbers in this table can be translated: 0 = Very Low, 1 = Low, 2 = Moderately Low, 3 = Moderate, 4 = Moderately High, 5 = High, and 6 = Very High.

	C o m m u n i t y T y p e								
Resource Value	A	B	C	D	E	F	G	H	J
Potential Cattle Forage Production	3-4	4-5	2-3	3	1-2	2-3	0-1	1-3	1-3
Grazing Suitability	3-4	4-5	2-3	3	1-2	2	0	1	2-3
Potential Timber Production	0-1	1-2	1-2	1-2	1	1	1	1	1
Timber Suitability	1	2	2	2	1	1	1	1	1
Developed Recreation	3	3	3	3	3	2	2	1	2
Dispersed Recreation	4	4	3	3	3	3	3	2	2
Scenic	3-4	3-4	3-4	3-4	3-4	2-3	2-3	1-2	2
Road & Trail Stability	3	3	3	3	3	2	2	1	2
Construction Suitability	2	2	2	2	2	2	2	1	2
Deer & Elk Hiding Cover	3-4	3-4	2-3	2-3	2-3	5	1-2	2	2
Deer & Elk Forage & Browse	3-4	3-4	3-4	2-3	2-3	2	2	1	1
Need for Watershed Protection	2	2	2	2	3	3	3	3	3
Soil Stability	2	2	2	2	2	2	1	1	1
Risk of Soil Loss-Natural	2	2	2	2	2	2	1	1	1
Risk of Soil Loss-Management	2	2	2	2	2	2	3	3	3
Risk of Permanent Depletion-Range	3	3	3	3	4	4	3	4	4
Risk of Permanent Depletion-Wildlife	3	3	3	4	4	3	3	4	4
Risk of Permanent Depletion-Timber	2	2	2	2	2	1	1	1	1
Resource Cost of Management	3	3	3	4	4	4	3	4	4
Cost of Rehabilitation	2	2	2	2	1	1	2	2	1

Table 04-20. Common Species in *Douglas-fir/bitterbrush-Gentle slopes*, where Characteristic cover > 10% or Constancy > 20%. "-" means that the species is not found. Dead cover is not listed. Cc = Characteristic Cover, Cn = Constancy. If Avc = Average Cover, then these are related using the formula $Avc = Cc \cdot 100\% / Cn$.

		C o m m u n i t y T y p e													
		A	B	C	D	E	F	G	H	J					
Code	Species	Cc(Cn) N = 3	Cc(Cn) 2	Cc(Cn) 4	Cc(Cn) 4	Cc(Cn) 6	Cc(Cn) 7	Cc(Cn) 5	Cc(Cn) 4	Cc(Cn) 6	Common Name				
TREES															
PICO	Pinus contorta	—	—	16(100)	—	—	6 (25)	—	—	28(100)	39(100)	—	—	6 (17)	lodgepole pine
PIPO	Pinus ponderosa	14(100)	18(100)	32(100)	7(100)	22(100)	3 (43)	1 (60)	15 (50)	11 (67)					ponderosa pine
POTR5	Populus tremuloides	15 (33)	35(100)	—	—	20 (50)	4 (50)	8 (86)	6 (60)	12 (75)	9 (83)				quaking aspen
PSME	Pseudotsuga menziesii	24(100)	10(100)	24(100)	42(100)	14(100)	12(100)	20 (80)	40 (75)	9(100)					Douglas-fir
SHRUBS															
AMAL2	Amelanchier alnifolia	1 (33)	—	—	2 (75)	1 (75)	1 (33)	1 (29)	1 (40)	—	—	1 (33)			Saskatoon serviceberry
ARUV	Arctostaphylos uva-ursi	5 (67)	10 (50)	—	—	3 (50)	—	—	3 (43)	10(100)	5 (25)	5 (17)			kinnikinnick
ARTR2	Artemisia tridentata	23(100)	1 (50)	19(100)	8(100)	26 (83)	10 (86)	1 (20)	18(100)	14(100)					big sagebrush
JUCO6	Juniperus communis	12(100)	10(100)	3 (50)	16(100)	5 (33)	6 (86)	7(100)	4 (75)	7 (50)					common juniper
MARE11	Mahonia repens	—	—	3(100)	2 (75)	1 (25)	1 (50)	2 (71)	1(100)	1 (25)	1 (50)				Oregon-grape
PUTR2	Purshia tridentata	18(100)	30(100)	26(100)	8(100)	12(100)	14 (86)	14(100)	1 (50)	10(100)					antelope bitterbrush
RICE	Ribes cereum	1 (33)	—	—	2 (75)	2 (75)	2 (67)	1 (57)	1 (40)	1 (25)	1 (33)				wax currant
SYRO	Symphoricarpos rotundifolius	3 (67)	—	—	4 (75)	13 (75)	3 (67)	2 (43)	T (20)	4 (75)	3 (33)				mountain snowberry
GRAMINOIDS															
CAGE2	Carex geyeri	55 (67)	70(100)	15 (75)	38(100)	7 (33)	29 (86)	5 (80)	45 (50)	40 (17)					elk sedge
CHGR15	Chondrosium gracile	—	—	—	—	—	T (17)	—	—	—	—	20 (17)			blue grama
ELEL5	Elymus elymoides	5 (67)	25(100)	5(100)	10 (50)	4 (83)	2 (71)	T (20)	5 (25)	1 (50)					bottlebrush squirreltail
FEAR2	Festuca arizonica	15 (33)	—	—	5 (25)	—	8 (83)	10 (14)	—	—	—	5 (17)			Arizona fescue
HECO26	Hesperostipa comata	—	—	—	20 (25)	—	—	—	—	—	—	—	—	—	needle-and-thread
KOMA	Koeleria macrantha	3 (67)	15(100)	—	—	5 (25)	2 (50)	7 (29)	2 (80)	5 (25)	4 (17)				prairie junegrass
MUMO	Muhlenbergia montana	5 (33)	—	—	30 (25)	5 (25)	3 (67)	5 (43)	—	—	—	5 (50)			mountain muhly
POFE	Poa fendleriana	15 (67)	30(100)	11 (50)	9(100)	9 (83)	4 (43)	—	—	8(100)	10(100)				muttongrass
POPR	Poa pratensis	50 (33)	—	—	—	—	—	50 (14)	—	—	—	—	—	—	Kentucky bluegrass
POSE	Poa secunda	—	—	—	—	—	10 (17)	—	—	—	10 (25)	—	—	—	Sandberg bluegrass
FORBS															
ACLA5	Achillea lanulosa	1 (33)	6(100)	1 (25)	—	—	T (33)	6 (57)	T (40)	1 (25)	—	—			western yarrow
ALLIU	Allium	—	—	—	—	5 (25)	5 (25)	20 (17)	—	—	—	—	—	—	onion
ALGE	Allium geyeri	—	—	—	—	—	—	—	—	—	—	—	40 (17)		Geyer onion
AMLA6	Amerosedum lanceolatum	—	—	—	—	—	—	10 (17)	1 (57)	T (20)	—	—	12 (50)		yellow stonecrop
ANPA4	Antennaria parvifolia	15 (67)	13(100)	1 (50)	1 (50)	1 (17)	4 (57)	T (20)	1 (75)	1 (83)					smallleaf pussytoes
ERCO24	Eremogone congesta	35 (67)	—	—	5 (25)	—	—	—	10 (43)	—	—	—	10 (17)		desert sandwort
ERSP4	Erigeron speciosus	5 (67)	—	—	1 (75)	1 (25)	1 (17)	3 (29)	—	—	3 (50)	—	—	—	Oregon fleabane
GROUND COVER															
BARESO	bare soil	—	—	—	—	—	—	3 (50)	3 (29)	10 (40)	—	—	T (17)		
LITTER	litter and duff	—	—	—	—	—	—	87 (50)	71 (29)	81 (60)	—	—	53 (17)		
GRAVEL	gravel 0.2-10 cm	—	—	—	—	—	—	1	10	11	—	—	6		
COBBLE	cobble 10-25 cm	—	—	—	—	—	—	9 (33)	7 (29)	7 (20)	—	—	9 (17)		
STONES	stone > 25 cm	—	—	—	—	—	—	3 (33)	5 (14)	—	—	—	16 (17)		
MOSSON	moss on soil	—	—	—	—	—	—	2 (17)	T (14)	3 (20)	—	—	—	—	
LICHENS	lichens on soil	—	—	—	—	—	—	4	5	9	—	—	T		

DOUGLAS-FIR/ELK SEDGE—COLD TO MODERATELY COLD—GENTLE TO STEEP

Douglas-fir/elk sedge—Dark Frigid or Cryic soils—Gentle to steep slopes, 8,700-10,200 ft

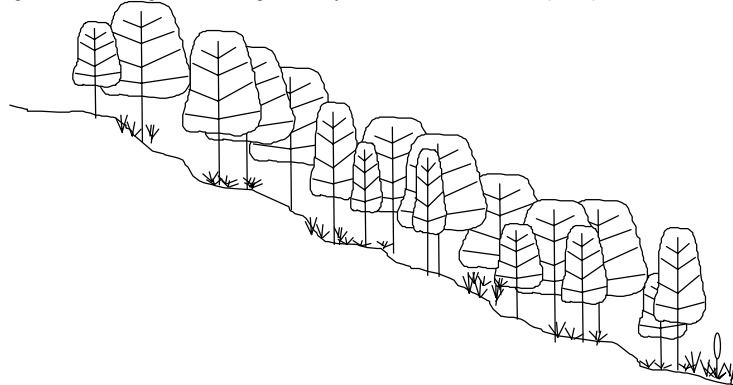


Figure 04-5. Cross-section of vegetation structure of *Douglas-fir/elk sedge*—Cold to moderately cold—Gentle to steep. Aspects are northerly, and slope angles average 30%.

Douglas-fir/elk sedge—Cold to moderately cold—Gentle to steep is a common type on slopes outside the deep rainshadows. It is characterized by Douglas-fir (PSME) and elk sedge (CAGE2). Aspen (POTR5), lodgepole pine (PICO), and snowberry (SYRO) are common associates in many stands. See Table 04-25 for common species names and codes.

This type is related to *Douglas-fir/pachistima—Dark soils—Northerly*, which has a conspicuous pachistima (short shrub) layer; and to *Douglas-fir/Thurber fescue—Cold dark soils—Gentle*, which has Thurber fescue conspicuous at somewhat higher elevations. It is also related to *Fir-spruce/elk sedge—Cold light-colored clay soils—Gentle*, which occurs at higher elevations, and includes subalpine fir and Engelmann spruce instead of Douglas-fir.

Some lower-elevation stands included in *Douglas-fir/elk sedge—Cold to moderately cold—Gentle to steep* might actually be *Douglas-fir/serviceberry—Steep northerly* from which the serviceberry has been removed by browsing of wild or domestic animals.

This type is typically a mostly closed-canopy stand of Douglas-fir and aspen. Lodgepole pine is sometimes dominant or codominant. Tall and medium shrubs are sparse, with some occasional common juniper (JUCO6) or snowberry shrubs. The herbaceous layer is well-represented, with elk sedge especially prominent.

The plant association *Pseudotsuga menziesii/Carex geyeri* has been described from northwestern Wyoming, Idaho, and the Front Range of northeastern Colorado (Cooper and others 1975, Giese 1975, Pfister and others 1977, Hess 1981, Steele and others 1981, Cooper and others 1983).

Elk sedge is not a very sensitive indicator, as shown by the wide range of types and environments in which it grows. Hence, *Douglas-*

fir/elk sedge—Cold to moderately cold—Gentle to steep is really an ecological type “in the middle” – on moderate slopes, on both Frigid and Cryic soils. It is identified more by the indicators that are lacking, such as pachistima, serviceberry, maple, fescue, bitterbrush, and so on, than by the indicators that are present (Table 04-21).

Code	Species	Cover
PIPO	ponderosa pine	<5%
PIPU, PIEN	blue, Engelmann spruce	<1%
AMAL2	serviceberry	<0.1%
PAVI11	chokecherry	<0.1%
PUTR2	bitterbrush	<2%
ARTR2	big sagebrush	<1%
FETH	Thurber fescue	<3%
FEAR2	Arizona fescue	None
MUMO	mountain muhly	None
ARUV	kinnikinnick	<6%
PAMY	pachistima	<2%
VAMYO	Rocky Mtn. whortleberry	<2%
LIBO3	twinsflower	None

Aspen and lodgepole pine are the usual seral trees. Most stands have aspen in them, but some are dominated by lodgepole pine. Community types E and F are permanent *disclimaxes*, from which Douglas-fir seed sources were effectively eliminated by persistent and/or intense fires centuries ago. Aspen regeneration followed. Community types J and K are similar *disclimaxes*, where lodgepole pine regenerated instead of aspen.

Ponderosa pine stands adjoin this type on gentle benches with deeper soil. Tall willow communities (yellow or serviceberry willows) border this type in poorly drained bottoms. Blue spruce-cottonwood riparian communities occur in adjacent, higher-gradient streamcourses. Big

sagebrush communities are found on adjacent sunny, non-northerly, shallow, rocky benches. Serviceberry communities may occur on adjacent steep, concave, leeward sides of ridges. This ecological type falls into Fire Group 9, the cool or moist Douglas-fir habitat types (Crane 1982).

Moderately heavy to heavy grazing by cattle, sheep, deer, elk, antelope, or bighorn tends to increase bare soil and decrease graminoid cover.

Horizontal obstruction varies from moderate to high, so hiding cover potential for deer and elk is moderate to moderately high, but big game can use stands only in mild winters. See Table 04-22 for deer and elk preferences by community type.

Table 04-22. Wildlife values (relative to the whole UGB) for the principal wildlife species using <i>Douglas-fir/elk sedge—Cold to moderately cold—Gentle to steep.</i>		
CT	Mule Deer	Elk
	Season—Preference	Season—Preference
A, B, H, J, K	Winter, Mild: Moderate (Cover, Rest)	Winter, Mild: Mod. Low (Cover, Rest)
	Winter, Severe: Very Low	Winter, Severe: Very Low
C, D, E, F, G, L	Spring/Fall: Mod. High to High (Cover, Rest, Overnight)	Spring/Fall: Mod. High (Cover, Rest, Overnight)
	Winter, Mild: Moderately Low (Cover, Rest)	Winter, Mild: Low (Cover, Rest)
	Winter, Severe: Very Low	Winter, Severe: Very Low
	Spring/Fall: Mod. High (Cover, Rest, Overnight)	Spring/Fall: Moderate (Cover, Rest, Overnight)

Summary of Ecological Type Characteristics

1. Explanation of symbols is found in Appendix C. Percentages in [brackets] indicate the percentage of plots sampled that have that characteristic.

NUMBER OF SAMPLES	50; soil descriptions from 7 of these (total 50)
ELEVATION	9,337 ft (8,700-10,120 ft); 2,846 m (2,652-3,084 m)
AVERAGE ASPECT	325°M (r = 0.23)
LITHOLOGY	A variety, including gneiss, sandstone, schist, granite, and others
FORMATIONS ¹	A variety
LANDFORMS	Soil creep slopes
SLOPE POSITIONS	Backslopes
SLOPE SHAPES	Variable (mostly linear) horizontally; Linear vertically
SLOPE ANGLE	30.4% (13-66%)
SOIL PARENT MATERIAL	Colluvium [83%]
COARSE FRAGMENTS	4.7% (0-24%) cover on surface, 42.0% (9-85%) by volume in soil
SOIL DEPTH	62 cm (33-155 cm); 24.2 in (13-61 in)
MOLLIC THICKNESS	17 cm (1-52 cm); 6.5 in (0-20 in)
TEXTURE	A wide variety
SOIL CLASSIFICATION	Cryoborolls [50%]; Eutroboralfs [38%]
TOTAL LIVE COVER	196.3% (66.0-448.5%)
NUMBER OF SPECIES	18.2 (5-42)
TOTAL LIVE COVER/NO. SPECIES	12.5% (3.0-29.6%)
CLIMATE	Usually outside rainshadows, occasionally within partial rainshadow. Moderately moist, cool forest.
WATER	As long as the canopy is intact, litter and duff keep soil moisture through the season. Usually no open water in the sites, although there is water uncommonly in adjacent riparian sites.

Key to Community Types

1. Douglas-fir >20% cover, dominant over (more cover than) other trees. Lodgepole pine absent or <15% cover. Aspen absent or subordinate to Douglas-fir(2)
1. Douglas-fir subordinate to either aspen or lodgepole pine. Either aspen >35% cover or lodgepole pine >20% cover.....(5)
2. Aspen absent. Elk sedge <30% cover. Douglas-fir <70% cover(3)
2. Either aspen cover >10% or elk sedge >30% or Douglas-fir >60%(4)
3. Elk sedge <15% cover **G**
3. Elk sedge >20% cover **C**
4. Aspen >10% cover, subordinate to Douglas-fir (>20%). Elk sedge >30% cover **B**
4. Aspen absent or <10% cover. Douglas-fir >35% cover **A**
5. Aspen >45% cover, often >60%, dominant over other trees. Lodgepole pine usually absent, but sometimes up to 15%. Douglas-fir absent or conspicuous, 0-35% cover. Elk sedge >15% cover.....(6)
6. Aspen absent to <45% cover. Lodgepole pine cover >30%, often >50%, dominant over other trees. Elk sedge minor to conspicuous, 5-80% cover(9)
7. Douglas-fir >10% cover, subordinate to aspen. Elk sedge >70% cover **D**
7. Douglas-fir absent or rarely <10% cover. Aspen cover >35%, dominant (8)
8. Elk sedge cover 15-45% **F**
8. Elk sedge cover 45-95% **E**
9. Douglas-fir present and >1% cover, clearly subordinate to lodgepole pine and/or aspen.....(10)
9. Douglas-fir absent (11)
10. Elk sedge cover >35% **H**
10. Elk sedge cover <25% **L**
11. Elk sedge cover >20%. Lodgepole pine cover 30-50% **J**
11. Elk sedge cover <20%. Lodgepole pine cover 35-70% **K**

Community Type Descriptions

- A** *Douglas-fir-elk sedge*. Douglas-fir is dominant, with >35% cover, often >60%. Aspen is sometimes present, up to 2% cover. Lodgepole pine is sometimes present, up to 15% cover. Elk sedge cover is >45%.
- B** *Douglas-fir-aspen-elk sedge-sparse snowberry-sparse Oregon-grape*. Douglas-fir is dominant at >20% cover, with aspen subdominant at 5-50% cover. Elk sedge cover is >30%.
- C** *Douglas-fir-snowberry-elk sedge*. Douglas-fir is dominant at >40% cover. Aspen is absent, and elk sedge cover is <35% cover. Lodgepole pine is sometimes present at <10% cover.
- D** *Aspen-Douglas-fir-common juniper-elk sedge*. Aspen is dominant at >55% cover. Douglas-fir is always present and is an obvious subdominant at >10% cover. Elk sedge is >70% cover.
- E** *Aspen-elk sedge*. Aspen is dominant at >35% cover. Douglas-fir is absent or rarely <1% cover. Elk sedge cover is >60%. This and CT F were previously classified as "aspen/elk sedge type," which was combined with this type because the soil and landform are indistinguishable from other community types, for example CT D. These are *disclimaxes*, in which a seral-vegetation type has become permanent, in this case because of lack of Douglas-fir seed source.
- F** *Aspen-snowberry-common juniper-Kentucky bluegrass-elk sedge-dandelion*. Aspen is dominant at >50% cover. Douglas-fir is absent or rarely <1% cover. Elk sedge cover is 10 to 30%.
- G** *Douglas-fir-sparse snowberry-sparse elk sedge*. Douglas-fir is dominant at >20% cover, with no aspen, and no lodgepole pine. The understory is sparse, with elk sedge and snowberry the only constants.
-

Community Type Descriptions (continued)

- H** *Lodgepole pine-Douglas-fir-aspen-elk sedge*. Lodgepole pine is dominant at >30% cover, often >50%. Douglas-fir is always present, ranging from 1 to 55% cover. Aspen is always present, ranging from 3 to 30% cover. Elk sedge cover is >35%.
- J** *Lodgepole pine-elk sedge*. Lodgepole pine is dominant at >30% cover, often >50%. Douglas-fir is absent, but aspen is sometimes present, up to 45% cover. Elk sedge cover is >20%. This and CT K were once classified as the "lodgepole pine/elk sedge type." These communities are *disclimaxes*, in which seral vegetation has become permanent, in this case because of lack of Douglas-fir seed sources.
- K** *Lodgepole pine-Oregon-grape-elk sedge*. Lodgepole pine is dominant with 35% cover. Douglas-fir or aspen cover may rarely as much as 5% cover. Elk sedge cover is <20%.
- L** *Lodgepole pine-Douglas-fir-elk sedge*. Lodgepole pine is dominant at >45% cover. Douglas-fir is always present, but varies from trace to 35% cover. Aspen is sometimes present in small quantities. Elk sedge cover is <20%.

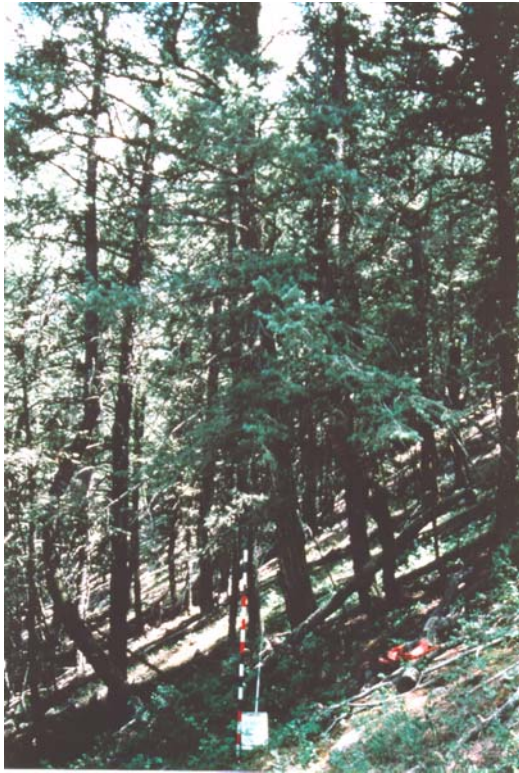
Communities Not Assigned to a Community Type

- A community with Douglas-fir dominant in a sparse canopy, and aspen present in trace amounts. Elk sedge is apparently absent or trace, but some dry-site grasses such as muttongrass (POFE) may be present. Based on landform and soil, this community belongs in this ecological type.

Table 04-23. Resource Values for <i>Douglas-fir/elk sedge–Cold to moderately cold–Gentle to steep</i> . Resource values were calculated from the numbers in Table 04-24, relative to the whole UGB.											
The numbers in this table can be translated: 0 = Very Low, 1 = Low, 2 = Moderately Low, 3 = Moderate, 4 = Moderately High, 5 = High, and 6 = Very High.											
C o m m u n i t y T y p e											
Resource Value	A	B	C	D	E	F	G	H	J	K	L
Potential Cattle Forage Production	3-4	3-4	3	4	4	4	2	3	3-4	1-2	1-2
Grazing Suitability	2	3	2	2	3	3	1	2	3	1	1
Potential Timber Production	3-4 PSME	3 PSME	3 PSME	3-4 POTR5	3-4 POTR5	3-4 POTR5	2-3 PSME	4 PICO	4 PICO	3-4 PICO	3-4 PICO
Timber Suitability	2-3	2-3	2	2	2-3	3-4	2-3	3-4	3-4	2-3	2-3
Developed Recreation	2	2	2	2	2	2	2	2-3	2-3	2-3	2-3
Dispersed Recreation	3	3	3	2	2	2	3	2	2	2	2
Scenic	3	3	3	2	2-3	2-3	2-3	2	2	2	2
Road & Trail Stability	2	3	2	2	3	3-4	3-4	4	4	4	3
Construction Suitability	2	2	2	2	2	3	3	3	3	3	3
Deer & Elk Hiding Cover	3-4	3	5	5	4	5	4	5	3-4	3-4	5
Deer & Elk Forage & Browse	3	3	2	3	3	2	1	2	1	1	1
Need for Watershed Protection	2	2	2	2	2	2	2	1	1	1	1
Soil Stability	4	4	4	3	3	3	4	4-5	4-5	4-5	4-5
Risk of Soil Loss-Natural	2	2	2	3	3	3	2	1-2	1-2	1-2	1-2
Risk of Soil Loss-Management	2	2	2	3	3	3	2	1	1	1	1
Risk of Permanent Depletion-Range	2	2	2	3	3	3	2	1	1	1	1
Risk of Permanent Depletion-Wildlife	1	1	1	2	2	2	1	1	1	1	1
Resource Cost of Management	2	2	2	3	3	3	2	1	1	1	1
Cost of Rehabilitation	4	4	4	2	2	2	2	3	3	3	3

Table 04-24. Community types within <i>Douglas-fir/elk sedge</i> –Cold to moderately cold–Gentle to steep.										
CT	No. Samples	Elevation, ft Slope, %	Coarse, % Depth, cm Mollic Depth, cm	Surface Coarse, % Bare, % Serai Stage	Lr	Layer Height, m	Avg Lyr Cvr %	Cover, %: Trees Shrubs Gramin. Forbs	No. Species Total Live Cover, % TLC/NS, %	Obstruction %: 1.5-2.0 m 1.0-1.5 m 0.5-1.0 m 0.0-0.5 m Total<2m
A. Douglas-fir-elk sedge	6	9,361 (9,180-9,760) 35.9 (21-66)	51 (30-85) 52 (42-57) 18 (5-40)	7 (3-11) 2 (1-3) LM	T1 T2 S1 T3 S2 GF S3 M L	20 (17-23) 7 (2.0-14) 1.8 (0.9-3.0) 1.1 (0.0-4) 0.3 (0.2-0.9) 0.2 (0.0-0.7) 0.1 (0.0-0.3) 0.0 0.0	79.7 19.9 9.3 0.3 16.3 52.7 8.9 8.7 0.9	81 (55-100) 30 (13-48) 59 (41-78) 22 (1-85)	25 (14-35) 191 (139-278) 8.3 (5.6-13.8)	47 (25-65) 35 (25-40) 32 (25-45) 62 (55-70) 44 (34-51)
B. Douglas-fir-aspen-elk sedge-sparse snowberry-sparse Oregon-grape	5	9,440 (9,160-9,720) 29.5 (29-30)	61 51 15	0 0 MS	*	*	*	59 (31-100) 44 (14-80) 57 (41-72) 17 (3-27)	19 (13-32) 177 (108-251) 11.0 (4.7-19.3)	25 25 25 35 28
C. Douglas-fir-snowberry-elk sedge	2	9,320 32	72 53 7	1 3 MS	T1 T2 S1 T3 S2 GF S3 M L	15 (6-20) 4 (2.0-5) Missing Missing 0.3 (0.1-0.5) 0.2 (0.0-0.3) 0.1 (0.0-0.1) Missing 0.0	65 1 M M 9 59 2 M 2	52 (46-59) 29 (28-31) 39 (35-44) 8 (4-13)	23 (16-29) 130 (115-144) 6.1 (5.0-7.2)	50 35 90 80 64
D. Aspen-Douglas-fir-common juniper-elk sedge	5	9,500 38	22 58 30	* * MS	T1 T2 S1 T3 S2 GF S3 M L	24 15 5 0.6 (0.1-1.0) 0.9 (0.6-1.3) 0.3 (0.0-0.7) 0.3 (0.0-0.6) Missing Missing	32 64 T T 5 97 9 M M	99 (84-118) 23 (6-40) 89 (61-111) 86 (20-141)	20 (15-33) 297 (200-374) 16.2 (9.8-23.3)	30 50 65 90 59
E. Aspen-elk sedge	6	9,580 (9,120-10,120) 29.6 (21-35)	27 94 1	5 (0-10) 5 MS	*	*	*	75 (38-106) 64 (12-121) 115 (85-146) 101 (35-201)	21 (10-35) 355 (207-448) 19.9 (5.9-29.6)	5 5 50 100 40
F. Aspen-snowberry-common juniper-Kentucky bluegrass-elk sedge-dandelion	3	9,100 (8,760-9,440) 17.0 (16-18)	9 155 52	0 2 EM	*	*	*	60 (53-72) 45 (36-51) 101 (62-121) 98 (39-135)	24 (15-41) 305 (203-363) 16.5 (5.0-24.2)	75 30 25 90 55
G. Douglas-fir-sparse snowberry-sparse elk sedge	2	8,810 (8,700-8,920) 34.2 (25-44)	48 (32-65) 45 (41-48) 10 (3-16)	17 (10-24) 9 (0-18) EM	T1 T2 S1 T3 S2 GF S3 M L	Missing 9 Missing 1.7 0.5 (0.3-0.9) 0.4 (0.0-0.7) 0.2 (0.0-0.3) 0.0 0.0	M 17 M 11 10 52 23 T T	48 (28-68) 20 (13-27) 23 (17-30) 21 (1-40)	35 (28-42) 112 (99-125) 3.3 (3.0-3.5)	30 35 20 60 36
H. Lodgepole pine-Douglas-fir-aspen-elk sedge	4	9,500 13	53 49 3	* * EM	T1 T2 S1 T3 S2 GF S3 M L	22 (18-24) 9 (2-18) Missing 0.5 (0.0-1.5) 0.5 (0.3-0.7) 0.2 0.1 (0.0-0.3) 0.0 Missing	48 64 M T T 48 2 1 M	80 (37-116) 24 (8-60) 51 (40-67) 12 (2-41)	17 (12-22) 167 (87-226) 10.2 (5.4-15.2)	65 35 50 75 56
J. Lodgepole pine-elk sedge	7	* *	* * *	* * EM	*	*	*	55 (30-96) 19 (10-55) 50 (20-100) 39 (3-105)	11 (5-17) 163 (84-311) 15.1 (6.0-21.0)	*
K. Lodgepole pine-Oregon-grape-elk sedge	6	* *	* * *	* * EM	*	*	*	50 (35-70) 19 (3-30) 15 (10-20) 9 (2-25)	9 (6-13) 94 (67-120) 12.2 (5.2-18.3)	*
L. Lodgepole pine-Douglas-fir-elk sedge	4	9,520 40	41 33 18	2 0 EM-MS	*	*	*	78 (58-100) 7 (2-15) 11 (6-20) 5 (1-11)	15 (9-21) 100 (66-118) 7.6 (4.7-13.1)	40 50 50 80 55

*. Unknown: measurements were not taken in this CT.



A Douglas-fir/elk sedge stand, Community Type A. Douglas-fir 86% cover, elk sedge 48%. Coarse Fragments Cover = 11%, Total Live Cover = 152%, Coarse Fragments in Soil = 72. Almont Quadrangle, elevation 9,320 ft, 66° 055' (NE) slope. July 20, 1994.



Another Douglas-fir/elk sedge stand (Community Type H). Even with an inch of snow on the ground, the patches of elk sedge are still noticeable. Lodgepole pine 60% cover, Douglas-fir 53%, aspen 3%, elk sedge 46%. Soil sampled as a Typic Haplochrept, Loamy-Skeletal, Mixed. Pitkin Quadrangle, elevation 9,500 ft, 13° 167' (SSW) slope. October 5, 1995.

Table 04-25. Common Species in *Douglas-fir/elk sedge–Cold to moderately cold–Gentle to steep*, where Characteristic cover > 10% or Constancy > 20%. "-" means that the species is not found. Dead cover is not listed. Ccv = Characteristic Cover, Con = Constancy. If Avc = Average Cover, then these are related using the formula $Avc = Ccv \cdot 100\% / Con$.

		C O M M U N I T Y T Y P E														
		A	B	C	D	E	F	G	H	J	K	L				
		Ccv(Con)	Ccv(Con)	Ccv(Con)	Ccv(Con)	Ccv(Con)	Ccv(Con)	Ccv(Con)	Ccv(Con)	Ccv(Con)	Ccv(Con)	Ccv(Con)				
Code	Species	N = 6	5	2	5	6	3	2	4	7	6	4	Common Name			
TREES																
PICO	Pinus contorta	15 (17)	5 (20)	6 (50)	4 (40)	6 (50)	1 (33)	–	–	49(100)	46(100)	49(100)	68(100)	lodgepole pine		
POTR5	Populus tremuloides	4 (67)	21(100)	–	–	75(100)	72(100)	59(100)	–	–	11(100)	20 (43)	3 (33)	3 (50)	quaking aspen	
PSME	Pseudotsuga menziesii	75(100)	36(100)	49(100)	22(100)	1 (17)	1 (33)	45(100)	19(100)	–	–	–	–	9(100)	Douglas-fir	
SHRUBS																
ARUV	Arctostaphylos uva-ursi	5 (17)	1 (20)	1 (50)	–	–	6 (17)	T (33)	–	–	5 (75)	5 (29)	1 (17)	1 (75)	kinnikinnick	
JUCO6	Juniperus communis	11 (67)	25 (80)	20 (50)	11(100)	5 (83)	12(100)	7 (50)	21 (75)	6 (86)	3 (83)	2 (75)	–	–	common juniper	
MARE11	Mahonia repens	3 (67)	7(100)	–	–	5 (40)	28 (50)	5 (33)	1 (50)	2 (75)	5 (86)	11(100)	5 (50)	–	Oregon-grape	
RICE	Ribes cereum	1 (17)	1 (60)	3(100)	1 (40)	–	–	5 (33)	1 (50)	–	–	–	–	1 (25)	wax currant	
ROWO	Rosa woodsii	15 (83)	10 (80)	1 (50)	7 (60)	23 (83)	6(100)	T (50)	10 (25)	7 (43)	8 (50)	1 (25)	–	–	Woods rose	
SYRO	Symphoricarpos rotundifolius	6 (67)	5(100)	15(100)	7 (60)	30 (83)	21(100)	8(100)	–	–	5 (14)	–	–	5 (25)	mountain snowberry	
VAMYO	Vaccinium myrtillus	–	–	–	–	–	–	–	–	–	15 (29)	–	–	–	Rocky Mountain	
	ssp. oreophilum														whortleberry	
GRAMINOIDS																
BRCA10	Bromopsis canadensis	1 (67)	3 (40)	–	–	7 (40)	16 (83)	1 (67)	3 (50)	–	–	3 (29)	–	–	fringed brome	
BRIN7	Bromopsis inermis	–	–	–	–	–	–	10 (33)	–	–	–	–	–	–	smooth brome	
CAGE2	Carex geyeri	53(100)	49(100)	29(100)	76(100)	72(100)	19(100)	3(100)	46(100)	42(100)	11(100)	9(100)	–	–	elk sedge	
ELGL	Elymus glaucus	–	–	–	–	20 (20)	24 (33)	–	–	–	–	–	–	–	blue wildrye	
FETH	Festuca thurberi	3 (17)	–	–	T (50)	1 (60)	2 (17)	1 (67)	T (50)	1 (25)	1 (29)	–	–	–	Thurber fescue	
POPR	Poa pratensis	T (17)	–	–	15 (50)	20 (20)	28 (17)	63(100)	–	–	5 (50)	15 (29)	–	–	Kentucky bluegrass	
FORBS																
ACLA5	Achillea lanulosa	1 (33)	2 (40)	10 (50)	30 (20)	20 (50)	20(100)	6 (50)	3 (50)	5 (14)	–	–	–	–	western yarrow	
ANPA4	Antennaria parvifolia	1 (17)	2 (60)	1 (50)	–	–	T (17)	T (33)	T (50)	1 (50)	1 (14)	1 (33)	1 (25)	–	smallleaf pussytoes	
ARCO9	Arnica cordifolia	3 (67)	18 (40)	1 (50)	19 (60)	1 (17)	–	–	–	30 (25)	13 (71)	5 (50)	4 (75)	–	heartleaf arnica	
ASTER	Aster	–	–	–	–	–	50 (17)	–	–	–	–	–	–	2 (25)	aster	
ASFO	Aster foliaceus	22 (17)	–	–	–	–	–	–	–	–	–	–	–	–	leafybract aster	
ASTRA	Astragalus	–	–	–	–	–	25 (17)	30 (33)	4 (50)	–	–	–	–	–	milkvetch	
ERIGE2	Erigeron	–	–	–	–	–	–	20 (33)	–	–	–	1 (14)	–	–	fleabane	
FRVI	Fragaria virginiana	3 (33)	5 (20)	–	–	11 (40)	21 (67)	–	–	–	–	13 (29)	10 (17)	–	Virginia strawberry	
GERI	Geranium richardsonii	T (17)	–	–	–	T (20)	40 (17)	5 (67)	–	–	–	–	–	–	Richardson geranium	
LALE2	Lathyrus leucanthus	7 (67)	–	–	–	53 (40)	21 (50)	10 (33)	2 (50)	–	–	35 (29)	–	T (25)	aspen peavine	
LUAR3	Lupinus argenteus	–	–	7 (60)	–	21 (40)	11 (67)	16 (33)	–	–	5 (25)	17 (71)	13 (33)	–	silvery lupine	
OSDE	Osmorhiza depauperata	–	–	–	–	–	20 (17)	–	–	–	–	–	–	–	sweet cicely	
SESE2	Senecio serra	–	–	–	–	–	23 (33)	–	–	–	–	–	–	–	butterweed	
															groundsel	
TAOF	Taraxacum officinale	1 (33)	1 (40)	–	–	18 (60)	7 (50)	47(100)	–	–	–	–	10 (14)	1 (17)	–	common dandelion
THFE	Thalictrum fendleri	14 (33)	–	–	–	33 (40)	29 (33)	–	–	–	–	–	–	–	–	Fendler meadow-rue
GROUND COVER																
BARESO	bare soil	2 (50)	T (20)	3 (50)	–	–	5 (17)	2 (33)	9(100)	–	–	–	–	–	T (25)	
LITTER	litter and duff	94 (67)	99 (20)	96 (50)	99 (20)	91 (33)	97 (33)	73(100)	99 (25)	–	–	–	–	–	96 (25)	
RAVEL	gravel 0.2-10 cm	3	T	T	–	–	T	T	2	–	–	–	–	–	1	
COBBLE	cobble 10-25 cm	5 (17)	–	–	1 (50)	–	–	10 (17)	–	–	–	–	–	–	1 (25)	
STONES	stone > 25 cm	3 (17)	–	–	–	–	–	–	–	9(100)	–	–	–	–	–	
MOSSON	moss on soil	9 (33)	T (20)	–	–	–	2 (17)	–	T (50)	1 (25)	–	–	–	–	–	
LICHENS	lichens on soil	3	T	1	–	–	–	–	4	–	–	–	–	–	2	

DOUGLAS-FIR/THURBER FESCUE—COLD DARK SOILS—GENTLE

Douglas-fir/Thurber fescue—Dark Cryic soils—
Gentle slopes, 8,700-10,400 ft

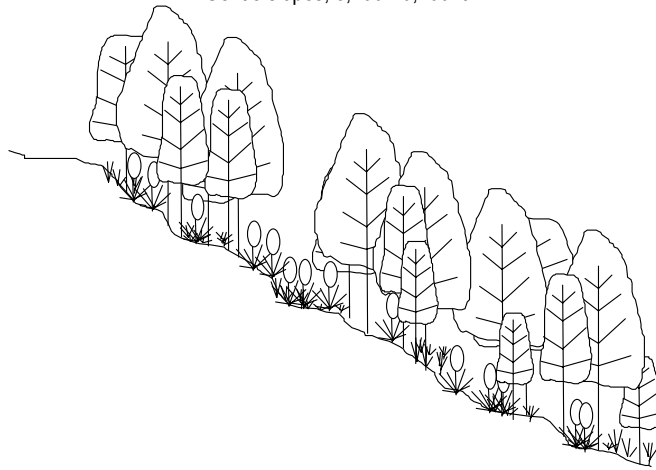


Figure 04-6. Cross-section of vegetation structure of *Douglas-fir/Thurber fescue—Cold dark soils—Gentle*. Aspects are northerly-westerly, and slope angles average 22%.

Douglas-fir/Thurber fescue—Cold dark soils—Gentle is a moderately common type on gentle slopes, in areas with cold (Cryic) soils outside the deep rainshadows. It is found in the Gunnison Basin on northwesterly slopes along the Montane-Subalpine ecotone, and is apparently known only from here, although descriptions of an “aspen/Thurber fescue type” from elsewhere in western Colorado could fit this classification. This type is characterized by Douglas-fir (PSME), aspen (POTR5), Thurber fescue (FETH), and elk sedge (CAGE2). Common juniper (JUCO6) and snowberry (SYRO) are common associates as well. See Table 04-28 for common species names and codes.

Stands in this type typically have a moderately open to moderately dense canopy of aspen and Douglas-fir, with the large bunchgrass Thurber fescue prominent in the understory. Elk sedge is mixed with the Thurber fescue, often forming a dense sward of graminoids under the tree canopy. It is bordered by other Douglas-fir forests on steeper slopes with coarser soils. It adjoins mountain big sagebrush/Thurber fescue (ARTRV/FETH) communities on gentler, more exposed slopes, and willow riparian (blue, yellow, serviceberry) communities on adjacent bottoms.

This ecological type falls into Fire Group 9, the cool or moist Douglas-fir habitat types (Crane 1982).

This type is closely related to *Aspen/Thurber fescue—Deep dark soils*, which occurs on gentler

slopes with deeper soils. The latter may describe stands in which aspen has remained dominant long enough to exclude Douglas-fir regeneration. Some stands are dominated by aspen, with Douglas-fir absent or very sparse (Community Types G, H, and J). These would be classified as *Aspen/Thurber fescue—Deep dark soils*, except that they have shallow soils and indicators of coniferous forests:

Kinnikinnick (ARUV) >10% cover, or
Common juniper (JUCO6) >25% cover, or
Oregon-grape (MARE11) >10% cover.

Douglas-fir/Thurber fescue—Cold dark soils—Gentle is also related to *Bristlecone pine/Thurber fescue—Cold soils*, which occurs on steeper, more southerly, higher-elevation slopes, and has different tree dominants. In addition, it is also related to *Douglas-fir/elk sedge—Cold to moderately cold—Gentle to steep*, which lacks Thurber fescue.

It resembles *Thurber-Arizona fescue—Deep cold dark soils* (or *Thurber-Idaho fescue—Deep cold dark soils*) meadows which have been invaded by aspen and Douglas-fir, though no evidence exists to support such a proposed succession. It is also possible that the Thurber fescue invaded the forest. The *Pseudotsuga menziesii/Festuca thurberi* plant association is described as new here, based in part on *Populus tremuloides/Festuca thurberi* of Hess (1981).

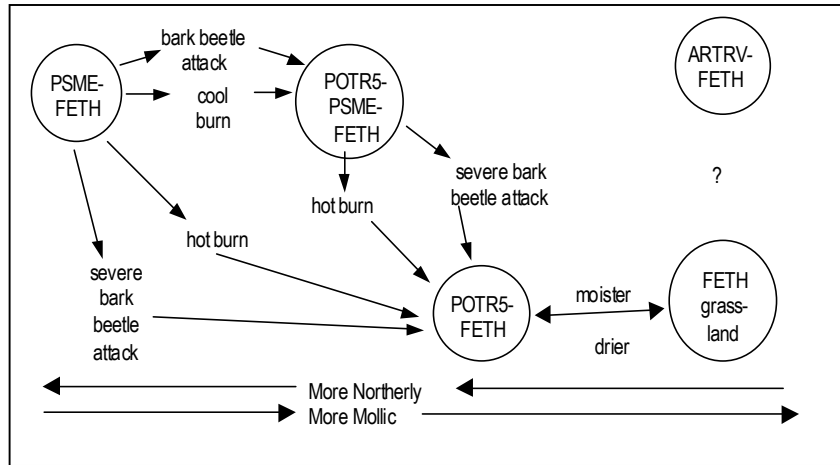


Fig. 04-7. Proposed relationships between five different Thurber fescue communities

Moderately heavy to heavy grazing by cattle, sheep, deer, elk, antelope, or bighorn tends to increase bare soil and decrease graminoid cover.

Horizontal obstruction has not been measured in this ecological type, though it seems likely that hiding cover potential for deer and elk is moderate.

Thurber fescue is modestly palatable to most herbivores, though less so for deer. This is clearly midsummer range only for deer and elk. Use by both animals is very low in all community types in winter and low during spring through fall.

Summary of Ecological Type Characteristics

1. Explanation of symbols is found in Appendix C. Percentages in [brackets] indicate the percentage of plots sampled that have that characteristic.

NUMBER OF SAMPLES	60, soil descriptions from none; 3 plots not assigned to a Community Type (Total 63)
ELEVATION	9,752 ft (8,700-10,400 ft); 2,972 m (2,652-3,170 m)
AVERAGE ASPECT	213°M (r = 0.59)
LITHOLOGY	Predominantly sedimentaries, with Shale, sandstone, and siltstone leading
FORMATIONS ¹	Km-Jmj [67%]
LANDFORMS	Soil creep slopes or slump-earthflows
SLOPE POSITIONS	Backslopes and upper backslopes
SLOPE SHAPES	Undulating [67%] to linear [33%] horizontally; Concave [50%] to linear [33%] vertically
SLOPE ANGLE	21.8% (10-40%)
SOIL PARENT MATERIAL	Primarily colluvium [83%]
COARSE FRAGMENTS	3.3% (0-24%) cover on surface
TOTAL LIVE COVER	330.1% (170.0-592.5%)
NUMBER OF SPECIES	16.8 (11-44)
TOTAL LIVE COVER/NO. SPECIES	20.4% (4.6-33.6%)
CLIMATE	Usually outside rainshadows, towards the highest elevations for Douglas-fir dominance.
WATER	These stands are moist to very moist for a conifer forest. Aspen and Thurber fescue both retain a great deal of moisture at the soil surface and in the soil.

Key to Community Types

- | | |
|---|--|
| 1. Thurber fescue >40% cover(2) | 7. Douglas-fir present, subdominant to (uncommonly) dominant, >5% cover A |
| 1. Thurber fescue <40% cover(8) | 7. Douglas-fir absent or rarely <5% cover G |
| 2. Elk sedge present, >40% cover(3) | 8. Lodgepole pine present and >10% cover..... (9) |
| 2. Elk sedge absent or <40% cover.....(6) | 8. Lodgepole pine absent or <10%(10) |
| 3. Parry oatgrass (DAPA2) conspicuous, >10% cover B | 9. Thurber fescue <10% cover J |
| 3. Parry oatgrass absent or rarely <5%(4) | 9. Thurber fescue >10% cover D |
| 4. Lodgepole pine present, >10% cover D | 10. Ponderosa pine present and >10% cover..... F |
| 4. Lodgepole pine absent or rarely <10%(5) | 10. Ponderosa pine absent..... (11) |
| 5. Douglas-fir present, subdominant to (uncommonly) dominant, >5% cover..... A | 11. Parry oatgrass conspicuous, >10% cover..... B |
| 5. Douglas-fir absent or rarely <5% cover..... G | 11. Parry oatgrass absent..... (12) |
| 6. Ponderosa pine present and >10% cover F | 12. Douglas-fir subdominant or dominant, >20% cover E |
| 6. Ponderosa pine absent(7) | 12. Douglas-fir absent or <10% cover..... (13) |
| | 13. Douglas-fir always present but <10% cover..... C |
| | 13. Douglas-fir absent H |

Community Type Descriptions

- A** *Aspen-Douglas-fir-Thurber fescue-elk sedge*. Aspen and Douglas-fir share dominance. Thurber fescue cover is >60%, and elk sedge cover ranges from 10 to 80%.
- B** *Douglas-fir-elk sedge-Thurber fescue* is dominated by aspen, with Douglas-fir subdominant, or Douglas-fir dominates, with no aspen present. Thurber fescue cover varies from 5 to 50%. Elk sedge cover is >40%.
- C** *Aspen-sparse Douglas-fir-elk sedge-Thurber fescue* is dominated by aspen, with >60% cover. Douglas-fir is always present, but in small quantities, Trace to 5% cover. Thurber fescue cover is 15-35%, and elk sedge is >60% cover.
- D** *Aspen-sparse lodgepole pine-common juniper-elk sedge-Thurber fescue* is dominated by aspen, at 35-85% cover. Douglas-fir is usually present in small quantities. Lodgepole pine is subdominant, at >1% and usually >10% cover. Thurber fescue cover is variable, 10-60%, and elk sedge cover is >40%.
- E** *Douglas-fir-aspen-common juniper-snowberry-elk sedge-Thurber fescue*. Aspen (at 10-60% cover) and Douglas-fir (20-45% cover) share dominance. Lodgepole pine is absent or <5%. Thurber fescue cover is 10-25%, and elk sedge is >40% cover.
- F** *Aspen-ponderosa pine-Douglas-fir-Thurber fescue-elk sedge-snowberry*. Ponderosa pine is codominant with aspen and Douglas-fir. Ponderosa pine cover is >10%, and lodgepole pine is absent. Thurber fescue cover is >20%; elk sedge cover is >30%.
- G** *Aspen-elk sedge-Thurber fescue-kinnikinnick-common juniper* is dominated by aspen at >45% cover. Douglas-fir is absent; lodgepole pine may be present or not. Thurber fescue cover is >40%, and elk sedge cover is >30%. Community types G, H, and J represent part of a broader concept of the aspen/Thurber fescue type (*Aspen/Thurber fescue-Deep dark soils*). They are *disclimaxes*, from which the seed source for Douglas-fir was eliminated a century or more ago.
- H** *Aspen-common juniper-elk sedge-Thurber fescue* is dominated by aspen at >60% cover. Douglas-fir and lodgepole pine are absent. Thurber fescue cover is 10-30%; elk sedge cover is >60%.
- J** *Aspen-lodgepole pine-common juniper-kinnikinnick-elk sedge-sparse*. Thurber fescue is dominated by aspen, at >60% cover. Lodgepole pine is present at >10% cover. Thurber fescue cover is <10%; elk sedge cover is >60%.

Communities Not Assigned to a Community Type

- A community with Douglas-fir and no aspen; ponderosa pine is present but subdominant. Elk sedge is very conspicuous, and Thurber fescue is present in small amounts. Though clearly part of this Ecological Type, this community does not clearly fit any of the above Community Types.
-

Table 04-26. Community types within <i>Douglas-fir/Thurber fescue</i> – <i>Cold dark soils</i> – <i>Gentle</i> . No measurements have yet been made of layers, obstruction, or soils in this Ecological Type.					
Community Type	ns	Elevation, ft Slope, %	Surface Coarse, % Bare, % Seral Stage	Cover, %: Trees Shrubs Gramin. Forbs	No. Species Total Live Cover, % TLC/NS, %
A. Aspen-Douglas-fir-Thurber fescue-elk sedge	6	9,200 (9,200-9,250) *	* * LS	79 (55-101) 59 (40-77) 139 (90-200) 103 (55-240)	16 (13-20) 380 (251-593) 23.0 (16.7-29.6)
B. Douglas-fir-elk sedge-Thurber fescue	11	9,400 (9,200-9,400) *	* * LS	62 (36-88) 57 (15-90) 127 (90-190) 56 (17-136)	18 (13-22) 302 (212-383) 17.2 (10.6-28.2)
C. Aspen-sparse Douglas-fir-elk sedge- Thurber fescue	9	9,950 (9,610-10,160) 18.3 (10-30)	7 * MS	86 (61-131) 54 (10-91) 131 (85-195) 86 (51-125)	17 (15-21) 357 (299-492) 20.9 (14.2-28.9)
D. Aspen-sparse lodgepole pine-common juniper-elk sedge-Thurber fescue	11	10,118 (9,610-10,280) 12.5 (10-20)	* * EM	68 (50-94) 65 (15-95) 103 (80-165) 95 (45-170)	15 (11-22) 331 (221-476) 21.6 (16.7-26.7)
E. Douglas-fir-aspen-common juniper- snowberry-elk sedge-Thurber fescue	6	9,655 (9,610-10,280) 30	* * MS	62 (42-90) 70 (36-125) 89 (50-135) 71 (20-145)	17 (14-20) 292 (170-455) 17.3 (10.6-26.8)
F. Aspen-ponderosa pine-Douglas-fir-Thurber fescue-elk sedge-snowberry	2	9,560 (9,560-10,280) 35	* * EM-MS	44 (23-65) 58 (51-65) 120 (110-130) 68 (65-71)	20 (18-22) 290 (269-311) 14.7 (12.2-17.3)
G. Aspen-elk sedge-Thurber fescue- kinnikinnick-common juniper	6	9,975 (9,550-10,400) 28.0 (16-40)	* * MS	68 (50-90) 70 (20-105) 135 (100-180) 103 (65-145)	15 (12-18) 376 (281-476) 25.4 (16.5-32.6)
H. Aspen-common juniper-elk sedge-Thurber fescue	7	9,448 (9,050-9,740) 25.2 (16-35)	0 7 EM	78 (61-105) 67 (10-140) 101 (67-155) 73 (17-211)	19 (11-44) 320 (203-571) 21.0 (4.6-33.6)
J. Aspen-lodgepole pine-common juniper- kinnikinnick-elk sedge-sparse Thurber fescue	2	* *	* * EM	81 (76-86) 40 (30-50) 95 (80-110) 51 (45-56)	14 (12-15) 266 (252-281) 20.1 (16.8-23.4)

*. Unknown: measurements were not taken in this CT.

Table 04-27. Resource Values for <i>Douglas-fir/Thurber fescue</i> – <i>Cold dark soils</i> – <i>Gentle</i> . Resource values were calculated from the numbers in Table 04-26, relative to the whole UGB.										
The numbers in this table can be translated: 0 = Very Low, 1 = Low, 2 = Moderately Low, 3 = Moderate, 4 = Moderately High, 5 = High, and 6 = Very High.										
	C o m m u n i t y T y p e									
Resource Value	A	B	C	D	E	F	G	H	J	
Potential Cattle Forage Production	4-5	4-5	3-5	3-5	3-4	4	4-5	3-5	3-4	
Grazing Suitability	4	4	2-3	3-4	3	2	3-4	3-4	3	
Potential Timber Production	2 POTR5	2 PSME	2 POTR5	1-2 POTR5	1-2 PSME	1-2 POTR5	2-3 POTR5	2-3 POTR5	2 POTR5	
Timber Suitability	1-2	1-2	1-2	1	1	1	2	2	1	
Developed Recreation	2	2	1	1	2	1	1	1	1	
Dispersed Recreation	3	3	2	2	3	2	2	2	2	
Scenic	3	3	4	4	3	4	4	4	4	
Road & Trail Stability	3	3	2	2	3	2	2	2	2	
Construction Suitability	1-2	1-2	1	1	1-2	1	1	1	1	
Deer & Elk Hiding Cover	3	3	3	3	3	3	3	3	3	
Deer & Elk Forage & Browse	3	4	4	4	4	4	4	4	4	
Need for Watershed Protection	3	3	4	4	3	4	4	4	4	
Soil Stability	3	3	2	2	3	2	2	2	2	
Risk of Soil Loss-Natural	3	3	4	4	3	4	4	4	4	
Risk of Soil Loss-Management	3	3	4	4	3	4	4	4	4	
Risk of Permanent Depletion-Range	2	2	4	4	2	4	4	4	4	
Risk of Permanent Depletion-Wildlife	2	2	3	3	2	3	3	3	3	
Risk of Permanent Depletion-Timber	1	1	2	2	1	2	2	2	2	
Resource Cost of Management	3	3	4	4	3	4	4	4	4	
Cost of Rehabilitation	2	2	3	3	2	3	3	2	2	

Table 04-28. Common Species in *Douglas-fir/Thurber fescue*–Cold dark soils–Gentle, where Characteristic cover > 10% or Constancy > 20%.
 "-" means that the species is not found. Dead cover is not listed. Cc = Characteristic Cover, Cn = Constancy. If Avc = Average Cover, then these are related using the formula $Avc = Cc \cdot 100\% / Cn$.

		C O M M U N I T Y T Y P E											
		A	B	C	D	E	F	G	H	J			
Code	Species	Cc(Cn) N = 6	Cc(Cn) 11	Cc(Cn) 9	Cc(Cn) 11	Cc(Cn) 6	Cc(Cn) 2	Cc(Cn) 6	Cc(Cn) 7	Cc(Cn) 2	Common Name		
TREES													
PICO	Pinus contorta	5 (33)	1 (9)	–	–	11 (82)	1 (50)	–	–	7 (67)	–	13(100)	lodgepole pine
PIPO	Pinus ponderosa	–	–	5 (64)	1 (11)	1 (9)	2 (50)	13(100)	–	–	1 (14)	–	ponderosa pine
POTR5	Populus tremuloides	57(100)	48 (82)	83(100)	47(100)	28(100)	18(100)	63(100)	78(100)	67(100)	–	–	quaking aspen
PSME	Pseudotsuga menziesii	20(100)	20(100)	2(100)	16 (82)	33(100)	14(100)	–	–	1 (29)	1 (50)	–	Douglas-fir
SHRUBS													
ARUV	Arctostaphylos uva-ursi	15 (33)	23 (55)	18 (22)	27 (82)	17 (50)	–	–	37(100)	26 (71)	15(100)	–	kinnikinnick
ARTR2	Artemisia tridentata	1 (17)	14 (45)	2 (33)	–	–	–	–	35 (50)	–	–	1 (14)	big sagebrush
ARTRV	Artemisia tridentata ssp. vaseyana	–	–	13 (18)	–	–	–	–	15 (17)	40 (50)	–	–	mountain big sagebrush
JUCO6	Juniperus communis	11 (83)	20 (91)	18 (78)	22(100)	16(100)	5 (50)	12(100)	16(100)	18(100)	–	–	common juniper
MARE11	Mahonia repens	23 (50)	20 (18)	–	–	25 (36)	25 (50)	–	–	5 (33)	9 (57)	5 (50)	Oregon-grape
ROWO	Rosa woodsii	25 (83)	25 (18)	23 (89)	17 (45)	23 (67)	–	–	22 (67)	20 (86)	10 (50)	–	Woods rose
SYRO	Symphoricarpos rotundifolius	14 (83)	10 (82)	16 (89)	10 (27)	14(100)	8(100)	13 (33)	18 (57)	–	–	–	mountain snowberry
GRAMINOIDS													
ACNE9	Achnatherum nelsonii	12 (50)	3 (18)	5 (44)	5 (9)	5 (17)	5 (50)	10 (33)	4 (14)	–	–	–	Nelson's needlegrass
BRCA10	Bromopsis canadensis	21 (67)	–	–	13 (33)	9 (73)	7 (50)	5 (50)	15 (83)	11 (71)	5 (50)	–	fringed brome
BRPO5	Bromopsis porteri	–	–	–	5 (11)	–	–	–	–	–	–	25 (50)	nodding brome
CAGE2	Carex geyeri	52(100)	59(100)	74(100)	66(100)	52(100)	45(100)	58(100)	70(100)	75(100)	–	–	elk sedge
DAPA2	Danthonia parryi	–	–	37 (82)	–	–	–	–	10 (50)	–	–	–	Parry oatgrass
ELGL	Elymus glaucus	–	–	–	15 (11)	–	–	–	–	–	–	–	blue wildrye
ELTR7	Elymus trachycaulus	10 (17)	–	–	16 (44)	20 (9)	–	–	–	5 (17)	–	–	slender wheatgrass
FEID	Festuca idahoensis	–	–	20 (9)	–	–	–	–	20 (50)	–	–	–	Idaho fescue
FETH	Festuca thurberi	65(100)	31(100)	19(100)	19(100)	15(100)	50(100)	53(100)	11(100)	5(100)	–	–	Thurber fescue
HECO26	Hesperostipa comata	–	–	–	–	–	–	10 (50)	–	–	–	–	needle-and-thread
POA	Poa	–	–	–	–	–	–	–	–	30 (14)	–	–	bluegrass
POFE	Poa fendleriana	–	–	20 (9)	20 (11)	–	–	–	–	–	–	–	muttongrass
POPR	Poa pratensis	–	–	–	55 (33)	90 (9)	100 (17)	–	–	20 (33)	4 (14)	–	Kentucky bluegrass
FORBS													
ACLA5	Achillea lanulosa	22(100)	25 (36)	21 (89)	23 (73)	35 (50)	20 (50)	23 (83)	20 (71)	1 (50)	–	–	western yarrow
ARCO9	Arnica cordifolia	30 (17)	40 (9)	–	–	33 (27)	10 (17)	–	–	–	40 (14)	25 (50)	heartleaf arnica
ASAL7	Astragalus alpinus	–	–	–	–	25 (9)	–	–	–	–	–	–	alpine milkvetch
CHDA2	Chamerion danielsii	–	–	–	20 (22)	–	–	–	–	–	–	–	fireweed
CIRSI	Cirsium	–	–	–	–	20 (9)	–	–	–	–	–	–	thistle
ERCO24	Eremogone congesta	–	–	10 (55)	1 (11)	30 (9)	–	–	40 (50)	–	–	–	desert sandwort
ERSP4	Erigeron speciosus	14 (67)	7 (82)	13 (33)	8 (18)	6 (67)	10(100)	10 (33)	–	–	–	–	Oregon fleabane
FRV1	Fragaria virginiana	30 (17)	25 (27)	13 (22)	27 (45)	20 (17)	–	–	37 (50)	5 (14)	13(100)	–	Virginia strawberry
GERI	Geranium richardsonii	–	–	5 (9)	12 (33)	10 (27)	5 (17)	–	–	13 (33)	3 (29)	–	Richardson geranium
LALE2	Lathyrus leucanthus	90 (17)	30 (9)	1 (11)	–	–	40 (33)	–	–	–	25 (29)	–	aspen peavine
LUAR3	Lupinus argenteus	25 (83)	16 (55)	18 (56)	30 (55)	20 (67)	13(100)	41 (83)	8 (71)	25(100)	–	–	silvery lupine
SOMI2	Solidago missouriensis	20 (17)	–	–	–	–	–	15 (50)	–	–	–	–	Missouri goldenrod
TAOF	Taraxacum officinale	17 (33)	40 (9)	30 (67)	23 (27)	30 (17)	–	–	15 (50)	11 (43)	–	–	common dandelion
THFE	Thalictrum fendleri	60 (17)	5 (18)	21 (56)	34 (45)	20 (17)	–	–	20 (17)	24 (43)	–	–	Fendler meadow-rue
THMO6	Thermopsis montana	–	–	–	–	30 (9)	–	–	–	10 (17)	–	–	golden banner
TRGY	Trifolium gymnocarpum	–	–	–	10 (11)	–	–	–	–	–	–	–	holly-leaf clover
TRRE3	Trifolium repens	–	–	–	–	20 (9)	30 (17)	–	–	–	40 (14)	–	white Dutch clover
VIAM	Vicia americana	10 (17)	10 (9)	7 (11)	–	–	10 (17)	–	–	–	37 (29)	–	American vetch
GROUND COVER													
BARESO	bare soil	–	–	–	–	–	–	–	–	–	7 (14)	–	–
LITTER	litter and duff	–	–	–	–	93 (11)	–	–	–	–	93 (14)	–	–
GRAVEL	gravel 0.2-10 cm	–	–	–	–	–	–	–	–	T	–	–	–
COBBLE	cobble 10-25 cm	–	–	–	–	7 (11)	–	–	–	–	–	–	–
STONES	stone > 25 cm	–	–	–	–	–	–	–	–	–	–	–	–
MOSSON	moss on soil	–	–	–	–	–	–	–	–	–	1 (14)	–	–
LICHENS	lichens on soil	–	–	–	–	–	–	–	–	–	3	–	–

DOUGLAS-FIR/KINNIKINICK—COLD TO MODERATELY COLD

Douglas-fir/kinnikinnick—Thin-dark Frigid or Cryic soils—
Gentle slopes, 8,800-10,000 ft

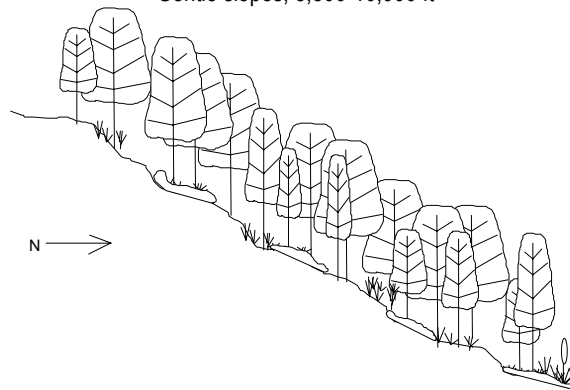


Figure 04-8. Cross-section of vegetation structure of *Douglas-fir/kinnikinnick—Cold to moderately cold*. Aspects are northerly, and slope angles average 19%.

Douglas-fir/kinnikinnick—Cold to moderately cold is a common type on gentle slopes in areas with cool (Frigid) to cold (Cryic) soils outside the deep rainshadows. In the UGB, it is found on Montane slopes. It has been described throughout the Rocky Mountains from western Montana and southern Idaho, on both the eastern and western slopes of the Central Rockies, and in the Southern Rockies in southern Colorado and northern New Mexico. This type is characterized by Douglas-fir (PSME), kinnikinnick (ARUV), and elk sedge (CAGE2). Lodgepole pine (PICO) and aspen (POTR5) commonly share dominance in these stands. See Table 04-32 for common species names and codes.

These stands are typically dense-canopy stands of Douglas-fir, aspen, and/or lodgepole pine. Common juniper (JUCO6) is the only shrub in the medium-shrub layer. Elk sedge is often the only species in the grass-forb layer. The short-shrub layer is conspicuous, with kinnikinnick usually the only species. The seral trees are aspen and lodgepole pine, and both are present in most stands. This type falls into Fire Group 9, the cool or moist Douglas-fir habitat types.

Neighboring communities include spruce-fir/moss or spruce-fir/mountain gooseberry on colder slopes at higher elevations, and tall willow (blue, serviceberry, Booth) riparian communities in bottoms. Thurber fescue grasslands adjoin this type in parks with deeper Mollic soils.

Community types D and E are permanent *disclimaxes* from which Douglas-fir has been eliminated by persistent and/or intense fire centuries ago. We have not encountered stands with lodgepole pine and kinnikinnick without other

tree species (Douglas-fir and/or aspen), even though such a combination might be expected under certain circumstances. There were no stands of pure aspen associated with kinnikinnick; such stands would probably have a dry enough soil surface to allow germination of conifers.

This type is related to *Douglas-fir/elk sedge—Cold to moderately cold—Gentle to steep*, where kinnikinnick is absent or <6% cover. It includes stands which were previously classified as the “lodgepole pine/ kinnikinnick type,” in which Douglas-fir had been removed by past hot fires.

This ecological type is included in the *Pseudotsuga menziesii/Arctostaphylos uva-ursi* plant association (Pfister 1977, Shepherd 1975, and Livingston 1949). The *Pinus contorta* phase of *Pseudotsuga menziesii/Arctostaphylos uva-ursi* is described as new here, based in large part on *Pinus contorta/Arctostaphylos uva-ursi* of Hoffman (1976), Henderson (1977), and Shepherd (1975).

Moderately heavy to heavy grazing by cattle, sheep, deer, elk, antelope, or bighorn tends to increase bare soil and decrease cover of elk sedge and other graminoids. Horizontal obstruction varies from low to very high, depending on the presence or absence of common juniper in the medium-shrub layer, and on tree regeneration. None of the stands are accessible to deer or elk in the winter because of deep snow accumulation, even during mild winters. Spring through fall, deer and elk use community types A, C, and E moderately, primarily for cover. Community types D, F, G, H, and J receive low use by deer and elk during the summer; community type B receives moderately low use by elk, but low use by deer.

Table 04-29. Wildlife values (relative to the whole UGB) for the principal wildlife species using Douglas-fir/kinnikinnick–Cold to moderately cold. "I" means the same as above.		
CT	Mule Deer	Elk
	Season–Preference	Season–Preference
A, C, E	Winter, Mild: Very Low Winter, Severe: Very Low Spring/Fall: Moderate (Cover)	Winter, Mild: Very Low Winter, Severe: Very Low Spring/Fall: Moderate (Cover)
D, F, G, H, J	Winter, Mild: Very Low Winter, Severe: Very Low Spring/Fall: Mod. Low (Cover)	Winter, Mild: Very Low Winter, Severe: Very Low Spring/Fall: Mod. Low (Cover)
B	Winter, Mild: Very Low Winter, Severe: Very Low Spring/Fall: Low (Cover)	Winter, Mild: Very Low Winter, Severe: Very Low Spring/Fall: Low (Cover)

Summary of Ecological Type Characteristics

1. Explanation of symbols is found in Appendix C. Percentages in [brackets] indicate the percentage of plots sampled that have that characteristic.

NUMBER OF SAMPLES	49, soil descriptions from 7; 1 not assigned to a Community Type (total 50)
ELEVATION	9,458 ft (8,800-9,940 ft); 2,883 m (2,682-3,030 m)
AVERAGE ASPECT	314°M (r = 0.32)
LITHOLOGY	Igneous: Gneiss-Tuff-Felsite-Granite [75%] or Sedimentary: Sandstone-Siltstone [25%]
FORMATIONS ¹	A variety
LANDFORMS	Primarily soil creep slopes [71%]
SLOPE POSITIONS	Mostly backslopes and upper backslopes [63%], some summits and shoulders [37%]
SLOPE SHAPES	Convex [57%] to linear [29%] horizontally, Linear [86%] vertically
SLOPE ANGLE	19.0% (2-39%)
SOIL PARENT MATERIAL	Mostly colluvium [71%]
COARSE FRAGMENTS	9% (0-5%) cover on surface, 44.0% (33-61%) by volume in soil
SOIL DEPTH	56 cm (41-75 cm) = 22.0 in (16-30 in)
MOLLIC THICKNESS	1 cm (5-19 cm); 4.3 in (2-7 in)
TEXTURE	Surface various textures, often loamy; subsurface various, often sandy
SOIL CLASSIFICATION	Eutroboralfs-Cryoboralfs [57%] or Borolls [29%]
TOTAL LIVE COVER	182.0% (55.0-473.0%)
NUMBER OF SPECIES	14.6 (4-35)
TOTAL LIVE COVER/NO. SPECIES	12.9% (2.4-26.3%)
CLIMATE	Usually in partial rainshadow. Moderately dry, cool to cold forest.
WATER	Kinnikinnick indicates a dry soil surface. Some moisture is retained in the soil by usually complete litter and duff cover, but passes through quickly where subsoil is coarse.

Key to Community Types

- | | |
|---|--|
| 1. Aspen dominant over (greater cover than) other trees, >40% cover, often >55% (2) | 8. Douglas-fir absent..... D |
| 1. Aspen dominated by other trees, <35%(10) | 8. Douglas-fir present, Trace to 15% cover (9) |
| 2. Douglas-fir present, >1% cover..... (3) | 9. Lodgepole pine dominant, >40% cover. Aspen absent..... F |
| 2. Douglas-fir absent or <1% cover.....(7) | 9. Lodgepole pine subdominant under aspen or Douglas-fir..... C |
| 3. Douglas-fir >20%, codominant with aspen..... (4) | 10. Lodgepole pine dominant, >30% cover (11) |
| 3. Douglas-fir 1-20% cover (5) | 10. Douglas-fir dominant, >20% cover..... C |
| 4. Lodgepole pine dominant or codominant, >20% cover C | 11. Aspen and Douglas-fir both absent (12) |
| 4. Lodgepole pine absent or <20% cover A | 11. Either aspen or Douglas-fir present and >1%..... (13) |
| 5. Lodgepole pine dominant or codominant, >20% cover. Douglas-fir present..... C | 12. Douglas-fir >25% cover, often >40%. Elk sedge absent. Ross sedge (CARO5) present and >1% cover..... J |
| 5. Lodgepole pine absent or <20% cover. Douglas-fir absent or rarely <15% cover (6) | 12. Douglas-fir 30-55% cover. Elk sedge >10%. Ross sedge >5% cover..... H |
| 6. Lodgepole pine absent B | 13. Aspen absent or <1% cover F |
| 6. Lodgepole pine present, 1-35% cover D | 13. Aspen >1%, often >10% cover (14) |
| 7. Lodgepole pine absent B | 14. Kinnikinnick >20% cover E |
| 7. Lodgepole pine present, >1%, often >30% (8) | 14. Kinnikinnick <20% cover G |

Community type descriptions

- A** *Aspen-Douglas-fir-common juniper-kinnikinnick-Oregon-grape-elk sedge* has aspen dominant, >70% cover, with Douglas-fir as a conspicuous subdominant, >20% cover. Lodgepole pine is sometimes present, up to 10% cover. Elk sedge cover is >70% and kinnikinnick is >20% cover.
- B** *Aspen-sparse Douglas-fir-kinnikinnick-rose-elk sedge* has aspen dominant, >45% cover. Douglas-fir is present, but <15% cover. Lodgepole pine is absent. Elk sedge cover is >30% and kinnikinnick is >10% cover.
- C** *Lodgepole pine-aspen-Douglas-fir-kinnikinnick-common juniper-elk sedge* has aspen, Douglas-fir or lodgepole pine dominant; both aspen and Douglas-fir are present. Elk sedge cover is >60%, and kinnikinnick >10% cover.
- D** *Aspen-lodgepole pine-kinnikinnick-common juniper-elk sedge* has aspen dominant, >45% cover. Lodgepole pine is a conspicuous subdominant, >15% cover. Douglas-fir is usually absent. Elk sedge is >60% and kinnikinnick >30% cover.
- E** *Lodgepole pine-aspen-kinnikinnick-common juniper-elk sedge* has lodgepole pine dominant over aspen. Douglas-fir is absent. Kinnikinnick cover is >10%, and elk sedge cover is >10%.
- F** *Lodgepole pine-sparse Douglas-fir-kinnikinnick-common juniper-elk sedge* has lodgepole pine dominant, >40% cover, over sparse Douglas-fir, Trace to 15% cover. Aspen is absent. Elk sedge cover is >5%, and kinnikinnick cover is >10%.
- G** *Lodgepole pine-aspen-kinnikinnick-elk sedge* has lodgepole pine dominant, >30% cover, over aspen, <30% cover. Douglas-fir is absent. Kinnikinnick and elk sedge cover are each 10-20%.
- H** *Lodgepole pine-kinnikinnick-Oregon-grape-elk sedge-Ross sedge* has lodgepole pine as the only tree, >30% cover. Kinnikinnick and elk sedge cover are both 10-20%. Ross sedge is 5-20% cover.
- J** *Lodgepole pine-kinnikinnick-Ross sedge* has lodgepole pine as the only tree, >30% cover. Kinnikinnick is 5-35% cover, but elk sedge is missing. Ross sedge is 1-20% cover.

Communities Not Assigned to a Community Type

- A community dominated by Douglas-fir, with a trace of ponderosa pine, kinnikinnick the leading species in a sparse understory, and no elk sedge. It is uncertain where this belongs.
-

Table 04-30. Community types within *Douglas-fir/kinnikinnick*–Cold to moderately cold.

Community Type	No. Samples	Elevation, ft Slope, %	Coarse, % Depth, cm Mollic Depth, cm	Surface Coarse, % Bare, % Seral Stage	Layer Height, m			Cover, %: Trees Shrubs Gramin. Forbs	No. Species Total Live Cover, % TLC/NS, %	Obstruction %: 1.5-2.0 m 1.0-1.5 m 0.5-1.0 m 0.0-0.5 m Total<2m
					Lr		Avg Lyr Cvr %			
A. Aspen-Douglas-fir- common juniper- kinnikinnick-Oregon- grape-rose-elk sedge	3	9,160 21	34 75 7	* * LS	T1 T2 T3 S1 S2 GF S3 M L	14 (10-17) 4 (2.0-5) 2.2 (1.5-3.1) 0.6 (0.4-1.1) 0.3 (0.1-0.7) 0.2 (0.0-0.8) 0.1 (0.0-0.1) Missing Missing	78 30 2 31 19 96 23 M M	105 (101-108) 86 (72-95) 118 (97-130) 42 (22-60)	19 (15-22) 350 (299-387) 19.5 (13.6-25.8)	100 85 65 70 80
B. Aspen-sparse Douglas-fir-kinnikinnick- rose-elk sedge	2	9,560 (9,220-9,900) 26.0 (25-27)	38 (33-43) 58 (49-67) 17 (14-19)	0 0 LM	T1 T2 T3 S1 S2 GF S3 M L	14 (12-17) 4 (2.0-7) 1.5 (0.4-2.5) 0.5 (0.3-0.8) 0.4 (0.1-0.6) 0.2 (0.0-1.0) 0.1 (0.0-0.1) Missing Missing	75 T 2 11 14 83 14 M M	66 (57-75) 50 (40-59) 69 (50-88) 36 (24-49)	28 (27-28) 221 (171-271) 8.0 (6.3-9.7)	15 (15-15) 18 (10-25) 20 (15-25) 68 (60-75) 30 (29-31)
C. Lodgepole pine- aspen-Douglas-fir- kinnikinnick-common juniper-elk sedge	13	9,113 (8,800-9,700) 15.0 (8-22)	44 41 17	0 0 LM	*	*		66 (41-110) 53 (21-160) 68 (7-140) 45 (2-180)	17 (12-35) 233 (85-445) 15.2 (2.4-26.2)	80 65 65 55 66
D. Aspen-lodgepole pine-kinnikinnick- common juniper-elk sedge	3	* *	* * *	* * MS	*	*		89 (61-105) 90 (80-101) 96 (65-151) 93 (16-210)	16 (11-20) 368 (266-473) 22.9 (18.3-26.3)	*
E. Lodgepole pine- aspen-kinnikinnick- common juniper-elk sedge	6	9,450 39	37 62 8	* 1 MS	T1 T2 T3 S1 S2 GF S3 M L	13 2.2 (1.5-4) 0.6 (0.0-1.5) Missing 0.3 (0.2-0.6) 0.2 (0.0-0.5) 0.1 (0.0-0.1) 0.0 0.0	86 18 T M 13 79 27 1 1	62 (26-120) 49 (35-75) 38 (15-75) 8 (0-30)	14 (9-25) 157 (88-262) 11.9 (6.7-18.8)	80 45 80 95 75
F. Lodgepole pine- sparse Douglas-fir- kinnikinnick-common juniper-elk sedge	7	9,850 *	* * *	* * MS	*	*		52 (42-71) 37 (16-70) 17 (5-31) 8 (1-20)	12 (11-14) 116 (77-168) 9.2 (6.8-12.0)	*
G. Lodgepole pine- aspen-kinnikinnick-elk sedge	6	9,940 *	* * *	* * EM	*	*		52 (27-90) 26 (15-40) 23 (12-40) 7 (0-15)	11 (8-13) 107 (55-161) 9.8 (6.1-12.4)	*
H. Lodgepole pine- kinnikinnick-Oregon- grape-elk sedge-Ross sedge	3	* *	* * *	* * EM	*	*		38 (30-50) 39 (25-61) 25 (21-30) 3 (1-5)	10 (8-13) 105 (97-118) 10.8 (9.0-12.6)	*
J. Lodgepole pine- kinnikinnick-Ross sedge	6	9,588 (9,475-9,700) 5.0 (2-8)	58 (56-61) 49 (42-55) 6 (5-7)	3 (1-5) 2 (2-2) EM	T1 T2 T3 S1 S2 GF S3 M L	13 (7-16) 5 (3-7) 0.8 (0.0-3.0) Missing 0.3 (0.2-0.6) 0.2 (0.0-0.4) 0.1 (0.0-0.2) 0.0 0.0	63.8 6.3 10.7 M 4.8 12.2 16.2 4.0 4.0	56 (30-72) 27 (14-50) 9 (1-15) 6 (0-20)	13 (4-24) 98 (55-126) 10.5 (3.9-18.0)	30 (0-60) 28 (5-50) 38 (20-55) 40 (10-70) 34 (9-59)

*. Unknown: measurements were not taken in this CT.

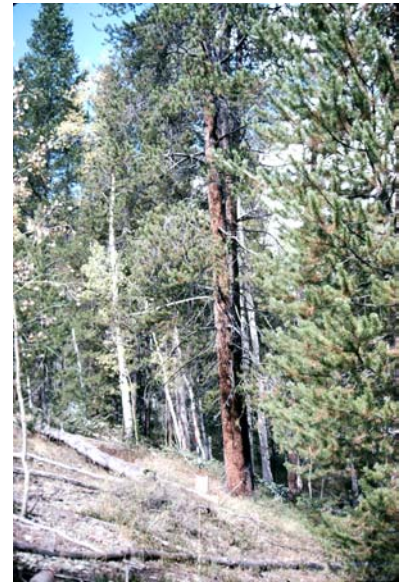
Table 04-31. Resource Values for <i>Douglas-fir/kinnikinnick</i> –Cold to moderately cold. Resource values were calculated from the numbers in Table 04-30, relative to the whole UGB.									
The numbers in this table can be translated: 0 = Very Low, 1 = Low, 2 = Moderately Low, 3 = Moderate, 4 = Moderately High, 5 = High, and 6 = Very High.									
	C o m m u n i t y					T y p e			
Resource Value	A	B	C	D	E	F	G	H	J
Potential Cattle Forage Production	3	2-3	2-3	3	2	1-2	1-2	2	1
Grazing Suitability	2	2	2	2	1	1	1	1	1
Potential Timber Production	2-3 PSME	2-3 POTR5	3-4 PICO, POTR5	2-3 POTR5	3-4 PICO	3-4 PICO	2-3 PICO	2-3 PICO	3-4 PICO
Timber Suitability	3	3	4	3	2	3	3	2	2
Developed Recreation	2	1	2	1	2	2	2	2	2
Dispersed Recreation	3	2	3	2	3	2	2	2	2
Scenic	3	4	3	4	3	2	2	2	2
Road & Trail Stability	3	2	3	2	3	3	3	2	3
Construction Suitability	2	1	2	1	2	2	2	2	2
Deer & Elk Hiding Cover	6	2	5	4	6	3-4	2-3	2-3	2-4
Deer & Elk Forage & Browse	2-3	2-3	2-3	3	2	2	2	1	1
Need for Watershed Protection	2	2-3	3	3	2	2	2	2	2
Soil Stability	3	2	3	2	3	3	3	2	3
Risk of Soil Loss-Natural	2	2	2	2	2	2	2	2	2
Risk of Soil Loss-Management	2	3	2	3	2	2	2	3	2
Risk of Permanent Depletion-Range	1	1	1	1	1	1	1	1	1
Risk of Permanent Depletion-Wildlife	1-2	1-2	1-2	1-2	1-2	1-2	1	1	1
Risk of Permanent Depletion-Timber	3	2	2	2	2	2	2	2	2
Resource Cost of Management	3	2	2	2	2	2	2	2	2
Cost of Rehabilitation	2	2	2	2	2	1	1	1	1



View in a late-midseral Douglas-fir-aspens/kinnikinnick stand (Community Type A). Elk sedge 94%, aspen 76%, Douglas-fir 32%, kinnikinnick 20%. Coarse Fragments Cover = 0%, Total Live Cover = 299%, Coarse Fragments in Soil = 30%. Soil sampled as a Mollic Eutroboralf, Fine, Smectitic. Signal Peak Quadrangle, elevation 9,160 ft, 21° 313° (NW) slope. July 14, 1994.



A Douglas-fir/kinnikinnick stand, where aspen maintains dominance (Community Type B). Aspen 75% cover, a trace of Douglas-fir, kinnikinnick 20%, rose 19%, common juniper 10%, Oregon-grape 8%, elk sedge 53%, nodding brome 17%. Soil sampled as a Typic Haploboroll, Clayey-Skeletal. Pitkin Quadrangle, elevation 9,220 ft, 25° 284° (WNW) slope. August 24, 1994.



Another Douglas-fir/kinnikinnick stand, dominated by lodgepole pine and aspen. Lodgepole pine 89% cover, aspen 31%, kinnikinnick 26%, common juniper 13%, elk sedge 73%. Soil sampled as a Typic Cryochrept, Fine-Loamy over Loamy-Skeletal. Pitkin Quadrangle, elevation 9,450 ft, 39° 087° (E) slope. October 5, 1995.

Table 04-32. Common Species in *Douglas-fir/kinnikinnick–Cold to moderately cold*, where Characteristic cover > 10% or Constancy > 20%. "-" means that the species is not found. Dead cover is not listed. Ccv = Characteristic Cover, Con = Constancy. If Avc = Average Cover, then these are related using the formula $Avc = Ccv \cdot 100\% / Con$.

Code	Species	A	B	C	M	U	N	I	T	Y	T	Y	P	E	J	Common Name	
		Ccv(Con)	Ccv(Con)	Ccv(Con)	Ccv(Con)	Ccv(Con)	Ccv(Con)	Ccv(Con)	Ccv(Con)	Ccv(Con)	Ccv(Con)	Ccv(Con)	Ccv(Con)	Ccv(Con)			
		N = 3	2	13	3	6	7	6	3	6	3	6	3	6			
TREES																	
PICO	Pinus contorta	6 (67)	–	–	27(100)	17(100)	44(100)	47(100)	39(100)	38(100)	56(100)					lodgepole pine	
POTR5	Populus tremuloides	75(100)	61(100)	26(100)	72(100)	19(100)	–	–	12(100)	–	–	–	–	–	–	quaking aspen	
PSME	Pseudotsuga menziesii	26(100)	5(100)	13(100)	–	–	–	–	5(100)	–	–	–	–	–	–	Douglas-fir	
SHRUBS																	
ARUV	Arctostaphylos uva-ursi	27(100)	21(100)	22(100)	37(100)	30(100)	14(100)	13(100)	12(100)	18(100)						kinnikinnick	
JUCO6	Juniperus communis	21(100)	4(100)	20(100)	17(100)	11(100)	10(100)	4 (67)	8 (67)	2 (50)						common juniper	
MARE11	Mahonia repens	19(100)	2(100)	7 (46)	30 (67)	1 (17)	20 (14)	9 (50)	12(100)	8 (83)						Oregon-grape	
ROWO	Rosa woodsii	19(100)	17(100)	9 (54)	25 (67)	5 (67)	8 (43)	7 (50)	15 (67)	5 (17)						Woods rose	
SHCA	Shepherdia canadensis	–	–	–	T (31)	1 (33)	1 (17)	1 (29)	1 (33)	–	–	–	–	–	2 (33)	russet buffaloberry	
VACE	Vaccinium cespitosum	–	–	–	–	–	20 (17)	11 (57)	–	–	–	–	–	–	–	dwarf bilberry	
GRAMINOIDS																	
ACPI2	Achnatherum pinetorum	–	–	–	–	10 (33)	–	–	–	–	–	–	–	–	–	pine needlegrass	
BRCA10	Bromopsis canadensis	16(100)	16(100)	14 (31)	3 (67)	1 (33)	1 (29)	1 (17)	–	–	–	–	–	–	–	fringed brome	
CAGE2	Carex geyeri	81(100)	42(100)	51(100)	70(100)	34(100)	14(100)	10(100)	15(100)	–	–	–	–	–	–	elk sedge	
CARO5	Carex rossii	–	–	–	5 (15)	–	5 (50)	7 (43)	7 (83)	8(100)	7(100)					Ross sedge	
ELEL5	Elymus elymoides	6 (67)	1 (50)	8 (23)	–	–	–	–	20 (17)	1 (33)	3 (33)					bottlebrush squirreltail	
POPR	Poa pratensis	50 (33)	–	–	55 (15)	60 (33)	–	–	–	–	–	–	–	–	–	Kentucky bluegrass	
FORBS																	
ACLA5	Achillea lanulosa	7 (67)	9(100)	10 (38)	20 (33)	1 (17)	–	–	5 (17)	–	–	–	–	–	–	western yarrow	
ARCO9	Arnica cordifolia	T (33)	–	–	19 (31)	–	11 (33)	6 (71)	8 (33)	–	–	–	–	–	–	heartleaf arnica	
EREX4	Erigeron eximius	–	19 (50)	–	–	–	–	–	–	–	–	–	–	–	–	forest fleabane	
FRVI	Fragaria virginiana	30 (33)	T (50)	28 (31)	70 (33)	1 (33)	10 (14)	–	–	–	–	–	–	–	T (17)	Virginia strawberry	
GERI	Geranium richardsonii	–	3 (50)	25 (8)	30 (33)	–	–	–	–	–	–	–	–	–	–	Richardson geranium	
LUAR3	Lupinus argenteus	4(100)	T (50)	15 (69)	3 (67)	9 (33)	15 (14)	5 (17)	–	–	–	–	–	–	–	silvery lupine	
POPU9	Potentilla pulcherrima	–	–	–	20 (8)	–	1 (17)	–	–	–	–	–	–	–	–	beauty cinquefoil	
TAOF	Taraxacum officinale	–	–	–	14 (31)	–	–	–	–	–	–	–	–	–	T (17)	common dandelion	
THFE	Thalictrum fendleri	30 (33)	15 (50)	10 (15)	60 (33)	–	–	–	–	–	–	–	–	–	–	Fendler meadow-rue	
TRIFO	Trifolium	–	–	–	15 (8)	–	–	–	–	–	–	–	–	–	–	clover	
TRGY	Trifolium gymnocarpum	–	–	–	40 (8)	–	–	–	–	–	–	–	–	–	–	holly-leaf clover	
GROUND COVER																	
BARESO	bare soil	–	–	T (50)	T (8)	–	–	1 (17)	–	–	–	–	–	–	–	2 (17)	
LITTER	litter and duff	99 (33)	97(100)	99 (8)	–	–	96 (17)	–	–	–	–	–	–	–	–	96 (33)	
GRAVEL	gravel 0.2-10 cm	–	–	T	–	–	–	–	–	–	–	–	–	–	–		
COBBLE	cobble 10-25 cm	–	–	T (50)	–	–	–	–	–	–	–	–	–	–	–	1 (17)	
STONES	stone > 25 cm	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2 (33)	
MOSSON	moss on soil	–	–	–	–	–	–	1 (17)	–	–	–	–	–	–	–	4 (33)	
LICHENS	lichens on soil	–	–	9	–	–	1	–	–	–	–	–	–	–	–	4	

DOUGLAS-FIR/BUFFALOBERRY–LIGHT-COLORED SANDY COLD SOILS–NORTHERLY

Douglas-fir-lodgepole pine/buffaloberry–
Sandy Cryochrepts–Gentle to steep northerly slopes, 9,050-10,520 ft

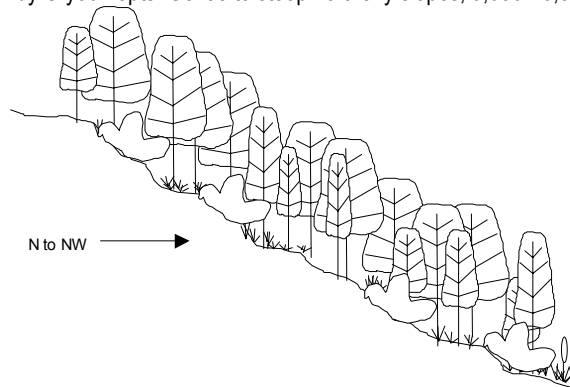


Figure 04-8. Cross-section of vegetation structure of *Douglas-fir/buffaloberry–Light-colored sandy cold soils–Northerly*. Aspects are northerly-westerly, and slope angles average 38%.

Douglas-fir/buffaloberry–Light-colored sandy cold soils–Northerly is an uncommon type on northerly slopes near the Montane-Subalpine boundary, with cold (Cryic) soils, in areas outside the deep rainshadows. In the Gunnison Basin, this type is found on westerly subalpine slopes. It has been described from northwestern Wyoming, and on the western slopes of the Rocky Mountains through Colorado and eastern Utah.

Douglas-fir/buffaloberry–Light-colored sandy cold soils–Northerly is characterized by Douglas-fir (PSME), lodgepole pine (PICO), and buffaloberry (SHCA), and by Cryic Inceptisol soils. Aspen (POTR5) and kinnikinnick (ARUV) are common associates. See Table 04-33 for common species names and codes. *Pseudotsuga menziesii/Shepherdia canadensis* is described as new here, based on the *Pinus contorta/Shepherdia canadensis* community type of Knight (1975), Steele (1979), Hoffman (1980), and Hess (1981).

Douglas-fir/buffaloberry–Light-colored sandy cold soils–Northerly is typically a moderately dense to dense stand of lodgepole pine, sometimes with aspen or Douglas-fir as subordinates. The understory is dominated by buffaloberry; the herbaceous understory is sparse to moderately sparse. *Douglas-fir/buffaloberry–Light-colored sandy cold soils–Northerly* is related to *Fir-spruce/ buffaloberry–Cold light-colored soils*, which occurs at higher elevations and in which subalpine fir and Engelmann spruce dominate in place of Douglas-fir. The two types often adjoin

each other across the Montane-Subalpine boundary, and intergrade across a short ecotone.

Douglas-fir/buffaloberry–Light-colored sandy cold soils–Northerly includes what once was called the “lodgepole pine/buffaloberry type” (community types C, E, and F). These community types are *disclimaxes*, stands from which hot and/or repeated fires have eliminated Douglas-fir, which is a fire-intolerant species. Community type C is co-dominated by aspen and lodgepole pine; community types E and F are dominated by lodgepole pine alone. We did not encounter a community in which pure aspen occurred with a buffaloberry understory; the soil surface of such a community would probably be dry enough to allow conifer germination, and so the community would be short-lived. Spruce-fir-buffaloberry communities adjoin this type on colder slopes at higher-elevations. Other Douglas-fir types are adjacent on more mesic, better protected slopes. Aspen types occur adjacent on moister, much better protected slopes and benches.

Horizontal obstruction is usually moderately high to high. Deer and elk use these stands only in midsummer, and then not much, because the stands are usually surrounded by other conifer forests, and there is little of interest for them here. Sites are inaccessible even during mild winters due to snow accumulation. Community types A, C, E, and F receive moderately low use by deer and elk in the summer for cover. Community types B and D receive low use by both deer and elk for cover in the summer.

Summary of Ecological Type Characteristics

1. Explanation of symbols in Appendix C. Percentages in [brackets] indicate the percentage of plots sampled that have that characteristic.

NUMBER OF SAMPLES	26, soil descriptions from 5 of these (total 26)
ELEVATION	9,666 ft (9,050-10,520 ft); 2,946 m (2,758-3,206 m)
AVERAGE ASPECT	320°M (r = 0.66)
LITHOLOGY	Granite [60%], sandstone, or shale
FORMATIONS ¹	Xg-Xb [89%]
LANDFORMS	Soil creep slopes
SLOPE POSITIONS	Backslopes
SLOPE SHAPES	Convex to linear horizontally, Linear vertically
SLOPE ANGLE	37.9% (24-49%)
SOIL PARENT MATERIAL	Colluvium
COARSE FRAGMENTS	4.4% (0-11%) cover on surface, 64.5% (28-85%) by volume in soil
SOIL DEPTH	88 cm (50-175 cm); 34.6 in (20-69 in)
MOLLIC THICKNESS	6 cm (3-9 cm); 2.5 in (1-4 in)
TEXTURE	Sandy-loamy surface (sandy loam-sandy clay loam [73%]; sandy subsurface (Loamy sand-sandy loam-sand-sandy clay [88%])
SOIL CLASSIFICATION	Cryochrepts [88%]
TOTAL LIVE COVER	176.5% (97.0-321.5%)
NUMBER OF SPECIES	14.5 (9-27)
TOTAL LIVE COVER/NO. SPECIES	13.0% (4.0-21.4%)
CLIMATE	Usually in partial rainshadow, sometimes in deep rainshadow. Dry to moderately dry, cold forest.
WATER	Dry microclimate and coarse soils cause most water to percolate or transpire. The abundant litter and duff layer increases the soil moisture somewhat in season.

Key to Community Types

1. Douglas-fir >55%, dominant. Aspen (or sometimes lodgepole pine) present but subordinate to Douglas-fir.. **A**
1. Douglas-fir absent or <50%, subordinate to lodgepole pine..... (2)
2. Aspen present, usually >1%, often >10% (3)
2. Aspen absent.....(5)
3. Douglas-fir present and usually >10% **B**
3. Douglas-fir absent (4)
4. Kinnikinnick >20% cover.....**C**
4. Kinnikinnick <20% **D**
5. Kinnikinnick present and >5%, usually >10%**F**
5. Kinnikinnick absent.....**E**

Table 04-30. Wildlife values (relative to the whole UGB) for the principal wildlife species using Douglas-fir/buffaloberry–Light-colored sandy cold soils–Northerly.		
CT	Mule Deer	Elk
	Season–Preference	Season–Preference
A, C, E, F	Winter, Mild– Very Low Winter, Severe– Very Low Spring/Fall– Mod. Low (Cover)	Winter, Mild– Very Low Winter, Severe– Very Low Spring/Fall– Mod. Low (Cover)
B, D	Winter, Mild– Very Low Winter, Severe– Very Low Spring/Fall– Low (Cover)	Winter, Mild– Very Low Winter, Severe– Very Low Spring/Fall– Low (Cover)

Description of Community Types

- A** *Douglas-fir-aspen-buffaloberry-sparse common juniper* Douglas-fir is dominant at >55%. Aspen or lodgepole pine may be present but both are clearly subordinate to Douglas-fir.
- B** *Lodgepole pine-Douglas-fir-buffaloberry-kinnikinnick* Lodgepole pine is dominant at >45%, often >60%. Aspen and Douglas-fir are conspicuous, but both are subordinate to lodgepole pine.
- C** *Lodgepole pine-aspen-kinnikinnick-buffaloberry* Lodgepole pine (25-65%) and aspen (5-40%) are codominant, with no Douglas-fir.
- D** *Lodgepole pine-sparse aspen-buffaloberry-common juniper-Rocky Mountain whortleberry* Lodgepole pine is dominant at 50-60%, and aspen is sparse.
- E** *Lodgepole pine-buffaloberry-common juniper-rose* Lodgepole pine is dominant at >25%, No aspen or Douglas-fir. Buffaloberry cover is >25%.
- F** *Lodgepole pine-buffaloberry-kinnikinnick* Lodgepole pine is dominant at >65%, with no aspen or Douglas-fir. Buffaloberry cover is 10-30%.

Table 04-31. Community types within <i>Douglas-fir/buffaloberry-Light-colored sandy cold soils-Northerly</i> .									
Community Type	No. Samples	Elevation, ft Slope, %	Coarse, % Depth, cm Mollic Depth, cm	Surface Coarse, % Bare, % Seral Stage	Layer Height, m	Avg Lyr Cvr %	Cover, %: Trees Shrubs Graminoids Forbs	No. Species Total Live Cover, % TLC/NS, %	Obstruction %: 1.5-2.0 m 1.0-1.5 m 0.5-1.0 m 0.0-0.5 m Total<2m
A. Douglas-fir-aspen-buffaloberry-sparse common juniper	3	9,200 49	74 62 8	10 (0-20) 1 (1-1) LS	T1 27 (20-30) T2 20 (16-26) T3 1.8 (0.3-4.0) S1 0.5 (0.3-1.3) GF 0.2 (0.0-0.9) S2 0.2 (0.0-0.5) M 0.0 L 0.0	53 20 6 34 3 29 9 3	89 (65-120) 45 (17-76) 41 (2-60) 36 (2-76)	18 (13-24) 210 (160-273) 13.3 (6.7-21.0)	55 25 55 75 53
B. Lodgepole pine-Douglas-fir-buffaloberry-kinnikinnick	6	9,050 35	28 50 8	2 2 LM	T1 * T2 Missing T3 * S1 * GF * S2 * M * L *	71 M T 6 17 5 7 3	85 (47-140) 49 (16-76) 10 (0-25) 10 (1-25)	16 (12-27) 154 (97-242) 10.3 (4.0-15.8)	*
C. Lodgepole pine-aspen-kinnikinnick-buffaloberry	6	* *	* * *	* * MS	*		71 (45-121) 60 (45-95) 30 (10-65) 16 (1-41)	13 (10-15) 177 (136-322) 13.9 (9.9-21.4)	*
D. Lodgepole pine-sparse aspen-buffaloberry-common juniper-Rocky Mtn. whortleberry	2	* *	* * *	* * EM	*		75 (62-87) 83 (26-140) 3 (1-5) 8 (5-11)	13 (10-16) 169 (98-239) 12.4 (9.8-14.9)	*
E. Lodgepole pine-buffaloberry-common juniper-rose	5	10,400 (10,280-10,520) 40.9 (33-49)	73 (61-85) 128 (81-175) 4 (3-4)	8 (4-11) * EM	T1 Missing T2 17 (10-27) T3 3.3 (0.5-7) S1 0.7 (0.2-1.2) GF 0.1 (0.0-0.2) S2 0.2 (0.0-0.5) M 0.0 L 0.0	M 78.9 7.4 30.5 4.4 56.0 7.1 1.6	52 (26-83) 93 (56-120) 12 (0-30) 25 (3-50)	15 (10-20) 183 (156-226) 13.4 (9.3-18.8)	40 (0-80) 35 (0-70) 33 (5-60) 53 (25-80) 40 (8-73)
F. Lodgepole pine-buffaloberry-kinnikinnick	4	9,280 24	75 71 9	4 2 EM	T1 Missing T2 15 (14-18) T3 3.1 (0.6-5) S1 0.4 (0.2-0.7) GF 0.2 (0.0-0.3) S2 0.1 (0.0-0.1) M Missing L 0.0	M 64 4 47 2 18 M 2	76 (65-95) 82 (52-111) 9 (0-26) 13 (0-25)	13 (9-19) 180 (118-217) 15.4 (6.2-20.6)	50 50 50 65 54

*. Unknown: measurements were not taken in this CT.

Table 04-32. Resource Values for <i>Douglas-fir/buffaloberry</i> – <i>Light-colored sandy cold soils</i> – <i>Northerly</i> . Resource values were calculated from the numbers in Table 04-30, relative to the whole UGB.						
The numbers in this table can be translated: 0 = Very Low, 1 = Low, 2 = Moderately Low, 3 = Moderate, 4 = Moderately High, 5 = High, and 6 = Very High.						
C o m m u n i t y T y p e						
Resource Value	A	B	C	D	E	F
Potential Cattle Forage Production	1-2	1	1-2	1	1	1-2
Grazing Suitability	1	0	1	0	0	1
Potential Timber Production	3-4 PSME	2-3 PICO	3-4 PICO, POTR5	3-4 PICO	3-4 PICO	3-4 PICO
Timber Suitability	2	2	2-3	2-3	2-3	3-4
Developed Recreation	2	2	2	2	2	2
Dispersed Recreation	2	2	2	2	2	2
Scenic	2	2	2-3	2	2	2
Road & Trail Stability	3	3-4	3-4	3-4	3	3-4
Construction Suitability	2-3	3	3	3	2-3	3
Deer & Elk Hiding Cover	4-5	3-4	4-5	3-4	3-5	4-5
Deer & Elk Forage & Browse	2-3	2	1-2	1-2	2-3	2-3
Need for Watershed Protection	2	2	3	2	2	2
Soil Stability	3	3-4	3-4	3-4	3	3-4
Risk of Soil Loss-Natural	3	2-3	2-3	2-3	3	2-3
Risk of Soil Loss-Management	2	2	3	2	2	2
Risk of Permanent Depletion-Range	1	0	2	0	0	0
Risk of Permanent Depletion-Wildlife	2	2	3	2	2	2
Risk of Permanent Depletion-Timber	2	2	1	2	2	2
Resource Cost of Management	3	3	3	3	3	3
Cost of Rehabilitation	2	2	1	2	2	2



A view in Douglas-fir/buffaloberry (Community Type B). Lodgepole pine 62% cover, Douglas-fir 14%, Ross sedge 9%, buffaloberry 7%, elk sedge 7%. Coarse fragments cover = 3%, Total Live Cover 109%, Coarse fragments in soil = 14. Soil sampled as a Typic Cryumbrept, Coarse-Loamy over Sandy-Skeletal, Mixed. Sargents Quadrangle, elevation 9,050 ft, 35% NNE slope. July 15, 1992.



A lodgepole pine and buffaloberry stand (Community Type F), seral to Douglas-fir/buffaloberry, showing the structure tall tree/medium shrub. There is little tree regeneration in this stand, and it likely will require fire to regenerate it. Lodgepole pine 65% cover, buffaloberry 23%, common juniper 19%, kinnikinnick 8%. Coarse Fragments Cover = 4%, Total Live Cover = 119%, Coarse Fragments in Soil = 79. Soil sampled as a Typic Haplumbrept. Sargents Quadrangle, elevation 9,280 ft, 24% 270° (W) slope. September 9, 1994.

Table 04-33. Common Species in *Douglas-fir/buffaloberry–Light-colored sandy cold soils–Northerly*, where Characteristic cover > 10% or Constancy > 20%. "-" means that the species is not found. Dead cover is not listed. Ccv = Characteristic Cover, Con = Constancy. If Avc = Average Cover, then these are related using the formula $Avc = Ccv \cdot 100\% / Con$.

Community Type		A	B	C	D	E	F	Common Name
Code	Species	Ccv(Con)	Ccv(Con)	Ccv(Con)	Ccv(Con)	Ccv(Con)	Ccv(Con)	
		N = 3	6	6	2	5	4	
TREES								
PICO	Pinus contorta	19 (33)	55(100)	37(100)	69(100)	52(100)	76(100)	lodgepole pine
PIPO	Pinus ponderosa	– –	10 (17)	– –	– –	– –	– –	ponderosa pine
POTR5	Populus tremuloides	14(100)	18 (67)	34(100)	5(100)	– –	– –	quaking aspen
PSME	Pseudotsuga menziesii	69(100)	17(100)	– –	1 (50)	– –	– –	Douglas-fir
SHRUBS								
ARUV	Arctostaphylos uva-ursi	18 (67)	9(100)	27(100)	13(100)	– –	22(100)	kinnikinnick
JUCO6	Juniperus communis	7(100)	17 (83)	5 (50)	18(100)	17(100)	23 (75)	common juniper
MARE11	Mahonia repens	1(100)	3 (33)	– –	5 (50)	8 (60)	1 (25)	Oregon-grape
PAMY	Paxistima myrsinites	1 (67)	1 (17)	– –	20 (50)	17 (20)	10 (25)	mountain-lover
ROWO	Rosa woodsii	1 (67)	4 (50)	13 (50)	5 (50)	6(100)	6 (75)	Woods rose
SHCA	Shepherdia canadensis	19(100)	16(100)	12(100)	18(100)	32(100)	19(100)	russet buffaloberry
VACE	Vaccinium cespitosum	– –	10 (17)	– –	– –	– –	– –	dwarf bilberry
VAMYO	Vaccinium myrtillus ssp. oreophilum	– –	12 (33)	25 (50)	20(100)	36 (80)	20 (75)	Rocky Mountain whortleberry
VASC	Vaccinium scoparium	12 (33)	– –	– –	– –	– –	– –	broom huckleberry
GRAMINOIDS								
CAGE2	Carex geyeri	40(100)	12 (50)	31 (83)	5 (50)	30 (20)	12 (75)	elk sedge
CARO5	Carex rossii	– –	5 (50)	5 (33)	– –	10 (40)	T (25)	Ross sedge
FORBS								
ARCO9	Arnica cordifolia	40 (67)	8 (83)	17 (83)	8(100)	18 (80)	10 (75)	heartleaf arnica
ASTRA	Astragalus	– –	– –	– –	– –	– –	15 (25)	milkvetch
LAL2	Lathyrus leucanthus	25 (33)	– –	– –	– –	– –	– –	aspen peavine
SOSI3	Solidago simplex	– –	1 (17)	1 (33)	1 (50)	– –	T (50)	Mt. Albert goldenrod
GROUND COVER								
.BARESO	bare soil	1 (33)	2 (17)	– –	– –	– –	2 (25)	
.LITTER	litter and duff	99 (33)	95 (17)	– –	– –	91 (40)	92 (25)	
GRAVEL	gravel 0.2-10 cm	–	1	–	–	2	2	
.COBBLE	cobble 10-25 cm	T (33)	– –	– –	– –	3 (20)	– –	
.STONES	stone > 25 cm	– –	– –	– –	– –	8 (20)	– –	
.MOSSON	moss on soil	9 (33)	7 (17)	– –	– –	14 (20)	– –	
LICHENS	lichens on soil	3	3	–	–	3	1	



A stand now dominated by lodgepole pine and buffaloberry (Community Type E), seral to Douglas-fir/buffaloberry. A Douglas-fir seed source was eliminated by hot fires centuries ago. Lodgepole pine 77% cover, Rocky Mountain whortleberry 47%, buffaloberry 37%. Coarse Fragments Cover = 4%, Total Live Cover = 192%, Coarse Fragments in Soil = 53. Soil sampled as a Typic Cryochrept, Coarse-Loamy, Mixed. Whitepine Quadrangle, elevation 10,280 ft, 49° 01'9" (NNE) slope. August 19, 1994.